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ADMIRAL SIR R. VESEY HAMILTON, K.C.B., President, Royal  
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RECENT NAVAL LITERATURE.

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In inviting me to address you this afternoon on the subject of recent naval literature, I do not suppose that our Council wished me to enter on a critical examination of recent works, but rather to call your attention more directly to them. For it so happens that within the last few years writings on naval subjects have been very numerous; many of them are of very great interest, and three stand out as of the first importance. It is scarcely necessary to name these. You have anticipated that I mean "The Influence of Sea Power upon History" (1890) and "The Influence of Sea Power upon the French Revolution and Empire" (1892), by Captain Mahan of the United States navy; and "Naval Warfare" (1891), by Admiral Colomb of our own navy. These books have deservedly excited very great attention. With Admiral Colomb's merits as an expounder and elucidator of the problems of naval strategy and naval tactics we have all been long familiar, and many of us have watched the growth and development of the work I have just named. With Captain Mahan's merits we were not so well acquainted; and, though his admirable little volume "The Gulf and Inland Waters," in "The Navy in the Civil War," had excited favourable notice, and had left an impression that it was the work of a coming man, there were, I fancy, few in this country who were not taken by surprise when the publication of "The Influence of Sea Power upon History" showed that the man had come. In the United States, of course, Captain Mahan was well known, from his

official position as Lecturer on Naval History at the Naval War College. I understand that his published works embody his lectures, as given at the College, to the officers of the United States navy.

Captain Mahan's ability, and the special direction of it, may perhaps be considered, to some extent at least, hereditary. His father was on the staff of the United States Military Academy; and we may suppose that the son was brought up in an atmosphere impregnated with military literature—military, in the wider and more correct sense than that to which our modern usage has narrowed the word. But, however that may be, it is quite certain that the book had a great and immediate success; and Captain Mahan was at once recognised as an authoritative teacher, one whose opinions carried very great weight, and who was, withal, gifted with an excellent literary power of asserting them. His later book, "The Influence of Sea Power upon the French Revolution," can scarcely be said to have increased his reputation, for that was already as high as it well could be; but it has certainly upheld and confirmed it. I do not know of any book on any serious subject as to which critics and reviews have been more unanimous in a favourable verdict; and, as far as I have had opportunities of judging, professional opinion is quite as unanimous.

This is not, of course, saying that we accept, blindly and without further consideration, the views which Captain Mahan has so ably put forward. It is very certain, indeed, that some of them are disputed by many; and on some points no decision seems to be arrived at. Similarly, we know that there are many who consider Admiral Colomb's propositions extremely controvertible, and who would assert that some of his theories are pestilent heresies. It is perhaps doubtful whether such strong opposition is not, in some cases at least, due to the imperfection, the misuse, or the misunderstanding of language rather than to a real difference of opinion; but in others it seems clear enough that the facts, rightly or wrongly considered, do lead different men to very different conclusions.

In reflecting on this it has occurred to me that I may be doing good service by bringing before you some of this contentious matter, and, so far as lies in my power, clearing the way for further discussion of problems which are of very great, and to us, more especially, of supreme, national importance.

What, for instance, are the possibilities or the probabilities of an invasion of this country? Admiral Colomb, as we all know, has maintained over and over again that invasion is absolutely impossible, so long as we have the command of the sea; and, with that proviso, I do not know that anyone has seriously disputed the statement. But there are a great many who do not seem to understand what is meant, or at any rate what Admiral Colomb means, by the expression *command of the sea*; so that we have it hypothetically lost by evasion, by decoy, or by various accidents which are supposed to have happened. But, so far as I have seen, these suppositions are always vague. An enemy's fleet has, it is said, eluded ours; but no details are given; we know not who the enemy is, where the fleet has come

from, where ours was, nor yet where ours is. Or again, our fleet is destroyed by high explosives; but we are not told why an enemy's ships can carry mélinite, or other such shells, and ours cannot; why the opinion of a Russian, or a Frenchman, or any other foreigner is so much sounder than that of an English expert, or how the enemy's ships escape that destruction which fell on more than one French ship in the old war, literally "hoist with her own petard." When a proposition is put forward thus vaguely it can only be answered vaguely; but Captain Mahan is at one with Admiral Colomb in this, that all history teaches us that the command of the sea is not to be won or contested by evasion, by decoy, or in any conceivable way except by the defeat or destruction of the enemy's fleet; and that every attempt at territorial aggression before the command of the sea has been won has ended in disaster, if not in utter ruin. This is what, as I understand it, Admiral Colomb has meant in his contention that any extended outlay on shore defences is a waste of public money, and, as diverting the expenditure from the navy, as the true national defence, is a public danger.

On this point, however, Admiral Colomb's meaning has been much misunderstood.

I see it, for instance, frequently stated that Admiral Colomb thinks "fixed defences" have no value; and that, as a general proposition, to be maintained as true, not only for England, but for France, or Germany, Russia, or Italy.

So far as England is concerned, it is not only Admiral Colomb who has urged that the scope of fixed defences and of the land army is very limited. Sir George Clarke, who, though a soldier, has written a treatise on "Fortification" (1890) which ranks as a very important contribution to "Recent Naval Literature," takes the same view; and the same opinion has been urged by very many others, naval officers, military officers, and civilians. It is because they treat a particular and concrete statement as though it were a general proposition that some writers have condemned Admiral Colomb's views in no measured language. It is perfectly certain that Admiral Colomb is as thoroughly impressed as any of his opponents with the value of fortifications of the grandest type in their proper place. He knows, not only by study but by personal experience, how the Russian fortifications at Cronstadt and at Sveaborg, as well as at Sebastopol, defended and preserved the Russian ships and arsenals. He knows perfectly well that in the wars of last or of the early years of this century the fortifications of Brest and Toulon and Cadiz were the safeguard of the French or Spanish fleets, whose guarantee no British Admiral, neither Hawke nor Boscawen, nor St. Vincent, nor Cornwallis, nor even Nelson, ever thought of violating. And, in fact, it has been repeatedly laid down, as a general proposition, that "fixed defences" are the natural and necessary weapons of those nations which calculate on being inferior at sea; but that to a nation which not only calculates on, but is determined on, being superior at sea, "fixed defences" on an extended scale are useless as against an attack from the sea.

Of course, if people will not take the trouble to understand the conditions of the problem, it is not to be wondered at that confusion arises, or that we find it urged that maritime Powers with a land frontier have fallen for want of land forces, which is reasonable enough; though, as far as I recollect, in the cases urged—Carthage, Pisa, Venice—the overthrow of their sea power preceded and prepared the way for their final downfall.

Indeed, one of the prettiest and most striking instances of the working of sea power adduced by Captain Mahan is the second Punic war, when the command of the sea was firmly held by the Romans. The result was, as every schoolboy knows, that Hannibal was compelled to lead his army from Spain into Italy by the long, toilsome, and dangerous route through Gaul and over the Alps, instead of quietly and comfortably ferrying it across the Tyrrhene Sea. If Carthage had held the command of the sea, the course of the second Punic war would have been very different from what it was, and the invasion of Carthaginian territory which led to the battle of Zama would have been impossible. Sir Edward Creasy, as you all know, has described the battle of the Metaurus as the decisive victory of Rome over Carthage; from Captain Mahan's point of view, the deciding battle of the Punic wars was neither Zama nor the Metaurus, but the battle of Myle, in which Duilius first defeated the Carthaginian fleet and laid the foundation of the Roman supremacy at sea.

On the other hand, it is difficult to see what Pisa or Venice has to do with the argument. It is true that they were, at one time, important maritime Powers; but though their naval strength had been broken long before their final ruin, they fell, as Continental States, by an invasion on *terra firma*. In 1870 the navy of France was enormously superior to the navy of Germany; but the most bigoted of Admiral Colomb's opponents will scarcely assert that the invasion of France by the German army is a manifest proof of the unsoundness of Admiral Colomb's theory. Of course the theory is not Admiral Colomb's at all, except in the sense that he has made strenuous efforts to convince our inexperienced generation of its historic and eternal truth. It is the theory of all time: the theory that was taught and illustrated by St. Vincent, by Hawke, by Russell, by Howard and Drake, by Edward III, by Hubert de Burgh, nay, by Harold and by Alfred.

But the ignorance of our inexperienced generation appears in this: that a distinguished and accomplished nobleman does not scruple to protest against it, publicly, in the House of Lords; to denounce the working of it as a vulgar and pretentious piece of brag. I am now referring to a scrap of "naval literature" which is very "recent" indeed. It appeared in the "Times" only three days ago, in the report of a debate which is still fresh in your memories. It was on a motion that it was the duty of Government to provide, "by immediate legislation, that the quantity of bread stuffs in the United Kingdom shall not, at any time, fall below" six months' consumption, and on an amendment to the effect that the danger fore-



shadowed by the resolution would be better met by the maintenance of such a navy as would ensure to us the supremacy of the sea, that Lord Playfair spoke.

"The amendment," he said, "ended with an old formula particularly disagreeable to foreign nations, that Britain must always preserve the supremacy of the sea. It was this supposed wish for an arrogant supremacy on the part of England that made France so unwilling to join with us in naval undertakings. Great Britain, at least in modern days, wanted no supremacy of the seas." I do not here ask why, on a matter peculiarly affecting British interests, we should have such a tender regard for the supposed susceptibilities of foreign nations; and still less do I now comment on the very remarkable statement in the last sentence I have quoted. I will only say that it proves that we have among us at least one intelligent and educated man who has not read Captain Mahan's books with the understanding and the heart, whether he has read them with the eye or not.

A point on which a more intelligent diversity of opinion is possible is that of the degree to which invasion is prevented by an inferior force. Admiral Colomb appears, sometimes, to imply a belief that any force, however small, can prevent invasion by any force, however large. In discussing the battle of Beachy Head, for instance, he says:—

Even though the beaten allied fleet had come "to an anchor at the Nore in great confusion; and, expecting that the French might attack them, all the buoys were taken up, and other necessary dispositions made as soon as they got there," yet the strategy of the conditions was such as to leave and keep the great French fleet powerless. If, indeed, the enemy had followed up and beaten the fleet at the Nore absolutely, "all would have been at his mercy." But "a fleet in being," even though it was discredited, inferior, and shut up behind unbuoyed sandbanks, was such a power in observation as to paralyze the action of an apparently victorious fleet either against "sea or shore."<sup>1</sup>

I think Admiral Colomb has, in this, said rather more than he meant. His words are, at any rate, capable of being understood as the statement of an abstract, general proposition: a fleet in being, though discredited, inferior . . . will necessarily and always paralyze the action of a victorious and much superior fleet. Admiral Colomb was, of course, thinking of the particular fleet under Torrington, which, partially defeated at Beachy Head, drew back to the Gun-Fleet, with the certainty of being reinforced from the river, and from the westward. His immediate reference to Torrington's own words shows how completely he was occupied with the concrete. He was not stating an abstract proposition. In this particular case he is following Torrington, who also held that the attitude of the inferior fleet—under the circumstances—paralyzed the superior. That Tourville did not attempt anything beyond the sacking of Teignmouth is sufficiently clear; it is, I think, not so clear that he might not have done more, if the land forces had been ready, as they were, say, in 1692 or in 1805. Torrington, of course,

<sup>1</sup> "Naval Warfare," p. 122. The quoted words are from Torrington's letters or speeches

knew that they were not ready, and the knowledge necessarily gave him confidence.

But the proposition, as an abstract one, cannot be maintained; otherwise it would be to affirm that the remains of the French fleet in Brest in 1761, though blocked by the squadron under Buckle, were an efficient safeguard against an attack on Belleisle; the very instance which, in the concrete form, Admiral Colomb adduces as showing the application of a method "absolutely faultless."<sup>1</sup>

We may thus, I think, take the fact to be that, while against an attack from the sea a superior fleet is a perfect and absolute defence, an inferior one can only be considered so in relation to the particular circumstances; and, carefully read, I do not think Admiral Colomb's statement amounts to more than this; though, from the language in which it is couched, it is liable to be misunderstood, and has been misunderstood.

A point of somewhat kindred interest which is, I think, often misunderstood, and as to which I not unfrequently hear very contrary opinions, is the power of sea force of controlling the operations of land troops. Captain Mahan has mentioned several instances of this, but none perhaps of more significance than that of the fall of New Orleans, as described in his latest work, the "Life of Admiral Farragut." We all, I suppose, remember that the approach to New Orleans from the sea was defended by two powerful works, Fort Jackson and Fort St. Philip, supported by a formidable boom, at a distance of some miles below the city; that Farragut forced his way through this boom and past the forts; and that—without further fighting—both city and forts fell. Why? According to Captain Mahan, the forts fell because they were isolated. Their communication with the city had been cut. The city fell as being no longer defensible when the command of the river above the forts permitted troops to be brought through creeks and bayous for a combined attack. Captain Mahan quotes Lord Wolseley as having written that the fall of New Orleans was largely due to—

Farragut's clear appreciation of the moral effect he would produce by forcing his way past the defences of Fort Jackson and Fort St. Philip, and by his appearance before New Orleans. For, after all, the forts were never captured by actual attack. This brilliant result is a striking instance of the due appreciation by a commander of the effect which daring achievements exert on men's minds, although, as in this case, those daring acts do not actually, directly or materially, make certain the end or surrender they may have secured.

And, again, in another place:—

Admiral Farragut's success was mainly due to the moral effect produced by his gallant passage of the forts. . . He never reduced the forts, and seems to have done them but little harm.<sup>2</sup>

This, the opinion of an eminent soldier, Captain Mahan distinctly controverts. He admits, of course, that—

<sup>1</sup> "Naval Warfare," p. 397.

<sup>2</sup> "Life of Farragut," p. 143; "North American Review," vol. cxlix, pp. 32—34, 527.

The moral effect produced upon men's minds, and through the mind upon their actions, is undeniable, and may rightly count for much in the calculations of a commander; but, when it becomes the sole, or even the chief reliance, the spirit displayed approaches closely to that of the gambler who counts upon a successful bluff to disconcert his opponent.

And in this instance, he thinks that "the moral effect" had comparatively little to do with the result.

Farragut—he says—was convinced by experience and reflection that his fleet could force its passage; and he saw that, once above, the material probabilities were that army and navy could be combined in such a position of vantage as would isolate the forts from all relief, and so "actually, directly, and materially, make certain their surrender," and secure his end of controlling the lower Mississippi. . . . Are strongholds never "captured" unless by "actual attack"? Did Ulm and Mantua yield to blows or to isolation?

But Captain Mahan does not rest on his own opinion. He shows that these were the views of the Confederate Generals in command at the time; that they all dwell on the actual and material danger, and not one on "the moral effect."<sup>1</sup>

Elsewhere, Captain Mahan has rightly laid great stress on the opinion of Nelson, as written to Lord Keith, on June 6, 1800, that "the British fleet could have prevented the invasion of Italy in 1795-96; that if Hotham had kept his fleet on that coast—the Riviera of Genoa—no army from France could have been furnished with stores or provisions; even men could not have marched."<sup>2</sup>

It may of course be said that this was only an opinion, the correctness of which was not proved. It was, indeed, an opinion, but it was the opinion of Nelson, whose judgment, on points of strategy or tactics, often proved to be right, was never proved to be wrong; and, as far as the subject now immediately before me is concerned, it is the opinion of Captain Mahan, who sums up his discussion of the events of 1795 in the words: "This campaign of the British fleet contributes another to the numerous lessons of history, upon the importance of having sufficient force at the decisive point and taking the offensive."

It is, however, interesting to place alongside this opinion of Nelson's the similar opinion, on a similar point of strategy, of a man of a genius which has been compared even with Nelson's, and who, at any rate, had a great deal of experience as to the effect of such operations as he spoke of. This was the Earl of Dundonald, who, towards the close of his long life, wrote:—

My chief motive for wishing to return to England—in the spring of 1809—was that during our operations against the French on the Spanish coast, I had seen so much of them as to convince me that, if with a single frigate I could paralyze the movements of their armies in the Mediterranean, with three or four ships it would not be difficult so to spread terror on their Atlantic shores, as to render it impossible for them to send an army into Western Spain. My object was to propose to the Government to take possession of the French islands in the Bay of Biscay, and to let me with a small squadron operate against the enemy's seaboard. Had this

<sup>1</sup> "Life of Farragut," pp. 144-6.

<sup>2</sup> "Influence of Sea Power upon the French Revolution," vol. i, pp. 196-201.

permission been granted, I do not hesitate to stake my professional reputation that neither the Peninsular war, nor its enormous cost to the nation, from 1809 onwards, would ever have been heard of. It would have been easy—as it will always be easy in case of future wars—so to harass the French coast as to find full employment for their troops at home, and thus to render any operations in Western Spain or even in foreign countries next to impossible.

And again:—

What I contend for is that no military force was at all needed in Spain, had the Government seized and held, by a comparatively small military force, the isles on the coast of France—Isles Dieu, Ré, Oleron, and a few others; following up or preceding this seizure by a limited number of active frigates harassing the whole western coast of France, which in consequence would not have been able to send a single regiment into Spain, and hence, we should have had no Peninsular war, with its hundreds of millions of national debt.<sup>1</sup>

This, again, may be said to be mere opinion. It is opinion; but it is not mere opinion. It is the opinion of a most capable man, who had large experience of operations similar to those he was suggesting, and which he had proved to have effects similar to those he has spoken of in the passage I have just read to you. I will not trouble you with his account of those operations, but I will ask your permission to quote from Lord Collingwood's despatch concerning them. It says:—

Lord Cochrane's enterprises have kept the coast in constant alarm, causing a general suspension of trade, and harassing a body of troops employed in opposing him. He has probably prevented those troops which were intended for Figueras from advancing into Spain by giving them employment in the defence of their own coasts.<sup>2</sup>

Putting, however, opinion entirely on one side, I will call your attention to a matter of fact which has not, I think, attracted so much attention as the clearness of the illustration deserves.

In the course of 1757 the enemy had captured Emden, which they held with a force of about 4,000 men. But, though they levied heavy contributions on the adjacent country, they were mainly dependent for supplies on the river. In March, 1758, Captain Holmes, in the "Seahorse" frigate, of 24 guns and 180 men, with the "Stromboli" fire-ship, of 16 guns and 100 men, was sent over to see if he could interrupt this river communication. In order to prevent any attempt of this kind, the enemy had not allowed the buoys to be laid, and so trusted mainly to the danger and difficulty of the approach, which, as the chart shows, is extremely nasty. They had, however, begun throwing up batteries, and were still working at them when Holmes with his two little ships came off the mouth of the river, threading his way through the intricacies of the shoals. On the 17th March the two ships anchored between Delfzijl and Knock, and on the 18th took up a position between Knock and Emden. The enemy immediately prepared to evacuate the place.

"On the 19th, at six in the morning"—I am quoting from Holmes's despatch—"the French troops were under arms, and marched out of the town before

<sup>1</sup> "Autobiography of a Seaman," vol. i, pp. 334—335.

<sup>2</sup> *Ibid.*, vol. i, p. 288.

night; and on the 20th the Austrians began their march at nine in the morning. About noon, and not before, I had notice of these operations, and that they had been transporting their baggage and cannon up the river in small vessels over night, and that one of them was lying round a point of land at some distance from us to go up by the next tide. So soon as we could stem the tide I despatched the armed cutter 'Acrias' and two of the boats in pursuit. They came up with the vessel we had intelligence of, and took her. I reinforced them by another boat, and the whole detachment continued the chase up the river. The enemy at this time lined both sides of it, and gave the first fire on the boats who were then coming up with three of their armed vessels."

And so, after a brisk skirmish, one of the vessels was captured. "The other two, which had cannon on board, got clear under favour of the night and cover of their army."<sup>1</sup>

There is yet another instance of this influence of sea power to which I must call your attention—an instance which has, I believe, not been much noticed, I might almost say has escaped recognition, until it has recently been brought out by the labours of Professor Gardiner in his "History of the Great Civil War."

It has, of course, been always understood that the fact of the navy having taken the side of the Parliament gave the Parliament a distinct advantage, enabling them to relieve such strongholds as Lyme when hard pressed by the Royalists, and preventing any would-be allies of the King from sending reinforcements or supplies to his aid. Clarendon's exaggerated story of Batten's cannonading the Queen's lodgings at Bridlington Quay has long been a familiar example of the great difficulties thrown in the King's way by this action of the navy. But I do not think it has been realized that the ultimate success of the Parliamentary forces was due to the sea power. Professor Gardiner's "History of the Great Civil War," though recent, can scarcely be classed as naval literature; but it is the only history of the period that clearly brings out the fact that in August, 1643, it was the navy alone that stood in the way of the King's success. What Professor Gardiner says is this:—

So little were the Parliamentary armies prepared to offer adequate resistance to the forces now arrayed against them, that posterity has pointed to these August months [August, 1643] as marking the instant when a virile resolution on the King's part would probably have changed the fortunes of the war. To understand why that resolution was not taken by Charles is to understand why his adversaries, rather than himself, became masters of the field.

Both sides had known how to avail themselves of the local feeling which was still strong in England. It was a feeling which had proved of excellent service as long as the struggle remained local . . . The startling victories of the Royalists in June and July [1643]—notably Adwalton Moor in the north and Roundway Down in the west—had made it incumbent on Charles to play a bolder game, and to combine his scattered forces for an attack on the central position of the enemy. Was it to be expected that the men who had hitherto served him well would march at his bidding far from their own homes, and would remember that they were Englishmen first and Yorkshiremen or Cornishmen only in a secondary sense?

Before the end of August, it was evident that the men of the north were not to be relied on for general service. Newcastle found that his Yorkshire levies refused to leave the country as long as their own fields and houses were endangered by

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<sup>1</sup> Beatson's "Naval and Military Memoirs," vol. ii, pp. 160—162.

forays from Hull. Whether he wished it or not, he was forced to lay siege to Hull as a preliminary to further operations; and Hull, open as it was to the sea, where the Parliamentary fleet was supreme, would hardly be overpowered as easily as Bristol, to which access by sea could readily be prevented.

To the men of the west, Plymouth was all that Hull was to the men of the north. The Cornishmen who had followed Hopton to victory would follow him no longer. They made up their minds to return home, that they might protect their country from the hostile garrison of Plymouth. Hull and Plymouth saved the Parliamentary cause. Charles's original design of advancing on three lines was necessarily postponed till it was too late to make the attempt with effect.<sup>1</sup>

I think you will find all our historians indicate the refusal or incapability of Newcastle to advance into the associated counties as the turning point in the war. Professor Gardiner is the only one who has shown the true reason for the fatal delay.

Very closely connected with operations such as I have been speaking of is the subject of blockade. Are blockades possible under modern conditions? Several officers, whose names and opinions carry very great weight, are inclined to answer such a question in the negative: and others would consider it doubtful. From these Admiral Colomb differs. He says:—

My point is that steam, looked at in the light of history, had at least not injured our powers of blockade. . . . A contrary opinion could only be arrived at by taking into account all the advantages which steam gave to the enemy for escape from his ports, and neglecting all those which it had given to the blockading force for observing him. Such a blockade as the Federal States set up off the Confederate ports could not have been thought of before the days of steam. It was steam which enabled the ships to close into the mouth of the port. It was steam which, by mitigating, if not removing, the perils of a lee shore, enabled the Federal ships to anchor as close to the water passage they were guarding as the range of the enemy's guns planted on shore would allow.<sup>2</sup>

And again:—

Whatever differences there may be amongst naval officers as to the capacity of a blockading squadron to seal another up in its port, there is no rift in the general conviction that the enemy must be watched wherever he is, and followed up. . . . Probably all that naval officers are certain about with regard to the escape of the ships from Bantry Bay and Lough Swilly [in the course of the manœuvres of 1888] is that the blockaders had neither force enough nor of the right kind for the work they had in hand. Judgment is perhaps suspended on the point whether any force would be competent to seal up, a determined and enterprising enemy.<sup>3</sup>

As to which, however, I may quote from the Report of the Committee on the manœuvres referred to:—

Under the altered conditions which steam and the development of attack by locomotive torpedoes have introduced into naval warfare, it will not be found practicable to maintain an effective blockade of an enemy's squadron in strongly fortified ports, by keeping the main body of the fleet off the port to be blockaded, without the blockading ships being in the proportion of five to three, to allow a sufficient margin for casualties—to which an enemy's vessels in a secure harbour would not be exposed—and the necessary periodical absence of a portion of the blockading squadron for the purpose of replenishing fuel, making good defects, &c.

<sup>1</sup> "History of the Great Civil War," vol. i, pp. 228—229.

<sup>2</sup> "Essays on Naval Defence," p. 139.

<sup>3</sup> *Ibid.*, p. 170.



Provided that a suitable anchorage could be secured in the immediate neighbourhood of the enemy's stronghold, the advantages would be in favour of the ironclad fleet occupying such a position, and maintaining a sufficient number of swift look-out vessels off the port, in direct communication with the Admiral. In such case the proportion of blockading battle-ships should not be less than four to three, and the squadron should be amply provided with colliers, and kept coaled up to full stowage.

The carefully considered and officially expressed opinion of men such as those who drew up this Report is of the very highest authority. It might perhaps, however, be matter for discussion whether, in fixing these ratios of five or four to three, they were not limiting the possibilities, or, at any rate, the probabilities, to small squadrons; whether, in fact, they were not dwelling on the events of the summer, and especially on the blockade of Bantry Bay. I should very much like to hear an expression of opinion as to the number of ships that would be required to blockade a fleet of, say, 21 capital ships, in Brest.<sup>1</sup> According to the Report I have just referred to, the requisite number would be 35. If that is to be accepted as the requisite number, then, it seems to me, the sooner we split our very big ships of 14,000 or 15,000 tons displacement into two, the better position we shall be in, should war come upon us.

Of course I know that, at the present time, there is a certain consensus of opinion in favour of big, of very big, ships. It is not for me to say that that opinion is faulty, though I myself do not hold it; but what I will say is, that it derives no support from history. Captain Mahan and Admiral Colomb have both appealed to history as the only sure guide; everything else is groping in the dark; and on no point is the teaching of history more positive than this, that beyond a certain limit, the force of a ship-of-war does not increase in proportion to an increase of size; and again, that, within, of course, reasonable limits, two small ships are superior to one large one, and yet again, that in a general action victory depends on superiority of number. I do not presume to explain why all this is so: I merely say it has been so in the past; and if, with Captain Mahan and Admiral Colomb, we are to accept the teachings of history, it will be so in the future.

There is, however, I believe, a strong, a perfectly natural, feeling, that the fact is contrary to what I have stated it. That, for instance, a big ship has a great, and, as a rule, a decisive advantage over a small one. I believe the stock instance of this, among line-of-battle-ships, is the capture of the "Leander" by the French "Généreux," shortly after the battle of the Nile; and among frigates, the capture of the "Guerrière" or the "Java" by the American "Constitution," or of the "Macedonian" by the "United States."

I do not know that anything can be said about the capture of the "Leander," except that it showed that, under ordinary circumstances,

<sup>1</sup> Our forefathers spoke of the ships of the first, second, or third rate, as *capital ships*, long before the invention of the term *ships of the line of battle*, and continued so to designate them till towards the end of last century. Now that we no longer have *ships of the line of battle*, the best thing we can do is to revert to the old usage instead of adopting a name so patently absurd as *battle-ships*.—J. K. L.

a 50-gun ship was not a match for a 74; but that that could not be stated as an absolute proposition had been curiously shown just 20 years earlier, in the very remarkable series of actions outside Narraganset Bay, on the 12th and 13th of August, 1778. At this time, the English fleet, under Howe, had been scattered; the French fleet, under D'Estaing, had been completely dispersed in a fierce gale on the 11th. On the 12th the French 74, "Marseillais," having lost her bowsprit and foremast, was attacked by the 50-gun ship "Preston," commanded by Commodore Hotham, a name which I specially mention, because Hotham, when afterwards Commander-in-Chief in the Mediterranean, had not the character of a very dashing officer. It may be that 20 additional years, and the dread sense of increased responsibility, had tamed his earlier fire.

For some little time the combat was maintained with no disadvantage to the "Preston;" but, as the sound brought up other French ships, she was obliged to draw off. The "Isis," also of 50 guns, was chased and overtaken by the "César," a 74, but beat her off after a smart engagement of an hour and a half's duration; "the effect," wrote Lord Howe, "not less of Captain Raynor's very skilful management of his ship, than of his distinguished resolution and the bravery of his men and officers."

On the 13th another 50-gun ship, the "Renown," Captain Dawson, fell in with D'Estaing's flagship, the "Languedoc," of 80 guns, completely dismantled. Lying under her stern, the little "Renown" pounded the huge but helpless Frenchman till nightfall. It was supposed that if the attack had been kept up, the "Languedoc" must have surrendered. Unfortunately, Dawson determined to lie by her till daylight, when, instead of being able to complete his conquest, he was hard pushed to escape from six other French ships which the noise of the firing had drawn together.

These actions were admittedly exceptional, and could not be held as proving that a 50-gun ship could fight an 80-gun ship on equal terms; but they did prove that, under certain circumstances, three little 50-gun ships might effect more than one 80-gun ship could.

As to the frigate actions of the last American war, it was, of course, comforting to our vanity to say that the Americans won by the greater size of their ships, the stouter scantling, the heavier guns, the number of men. It seems to me, on the contrary, that they won because we committed the very great fault of despising our enemy. We had beaten the French pretty well off the sea, and—drunk with pride and glory—neglected the most ordinary precautions.

In 1799 the English 18-pounder frigate of 1,091 tons captured the French 24-pounder frigate "Forte" of 1,401 tons, after an engagement of two hours and a half. The damage sustained by the "Forte" is thus stated by James:—

The bowsprit had gone close to the figurehead; the foremast, one foot above the forecastle; the mainmast, 18 feet above the quarterdeck; the mizenmast, 10 feet above the poop. As the masts had fallen with all the sails set, it was remarked that the three topsails were very slightly injured; the "Sibylle's" shot had taken a lower and more fatal direction. All the boats, booms, the wheel, capstan,

binnacle, and other articles on deck were cut to pieces. The starboard quarter-deck and fore-castle bulwarks were completely destroyed, and the side, from the bends upwards, was nearly beat in. Upwards of 300 round shot were counted in her hull; several of her guns were dismounted, and her very cables in the tiers were rendered unserviceable. She lost, as appears, 65 killed, including her captain, first lieutenant, and some other officers; and 80 wounded, including also several of her officers: of these 80 wounded, many died after suffering amputation.

On the other hand, the "Sibylle," though her masts and yards were badly wounded, had only received six shots in the hull and upper works, and had five killed, 17 wounded.

This does not seem to speak much for the unquestionable superiority of the 24-pounder frigate over the 18-pounder, nor for that of the frigate of 1,400 tons over one of only 1,000. It seems rather to show that, between frigates of that size and armament, seamanship and skill in working the guns were the conquering factors. The same thing was shown over and over again during the long war with France. A French 18-pounder threw a heavier shot than an English 18-pounder; the shot of a 36-pounder carronade was really nearly 42 lbs., and thus a French 18-pounder frigate was not only much bigger, but was much more heavily armed than an English frigate of the same nominal force. The broadside of the "Didon," for instance, was about 600 lbs.; that of the "Phœnix," 444 lbs., or just three-fourths of that of her opponent; but the "Phœnix" captured the "Didon." So also the "San Fiorenzo" captured the "Piémontaise" under similar material disadvantage. Why then were the English ships so utterly helpless when they came, in 1812, to contend with the American frigates, larger indeed than themselves, but not so immeasurably larger? I take it, it was because we had systematically begun to pay attention to the ornaments rather than to the fighting essentials of our ships. Even as early as 1806, Lord St. Vincent wrote: "There is great lack of seamanship in the Service, and the young people now coming up are, for the most part, frippery and gimcrack." Commenting on which, Captain Brenton wrote:—

These observations will apply to any period of our Service since 1806. "Frippery and gimcrack" were introduced about that period. The polishing system was carried to a shameful extent. I knew one captain of a guard-ship who employed his black-list men in polishing the breech of his main deck guns and the ringbolts on the deck. In short, from that day to the end of the war, everything was to be polished: brass guns, and howitzers, and swivels on the capstan.<sup>1</sup>

As an historian, Captain Brenton is so inaccurate that his authority is extremely slender, but in speaking of a detail which came under his own observation his evidence is perfectly good. And clearly, if a ship's company devoted to polishing ringbolts and brass guns those energies which ought to have been devoted to gun drill, the result, in the day of battle, was disastrous.

Other causes might sometimes produce the same effect. According to James, the "Java" had a shipload of paupers and gaol birds, rather than a complement of seamen; owing to which, and the extent to which the ship had been lumbered with stores, there had

<sup>1</sup> "Life of Earl St. Vincent," vol. ii, p. 286.

been no drill worth speaking of. Under such circumstances it is idle to speak of her brave defence against an enemy of superior force. The action lasted virtually for two hours, a time which had sufficed for the "Sibylle," of 1,000 tons, to pound the "Forte," of 1,400, into a mash; the "Java," of 1,300 tons, could only hit the "Constitution," of 1,500, a few times, inflicting no more damage than was put to rights in an hour, kill 12 men, and wound 22. We all know what very different results were obtained by the assiduous exercise carried out on board the "Shannon," with an absence of the "frippery and gimcrack" so distasteful to Lord St. Vincent.

There seems to be an idea afloat now that we must meet the enemy with arms regulated as in a duel, where the antagonists measure swords; and that if a possible enemy chooses to build a ship of, say, 20,000 tons, we must do the same. It is entirely a fancy of the present day, though I don't know that it has occurred to our friends of the sister service, that when they have to fight, say, an impi of Zulus, they ought to arm their men with shields and assegais. At any rate, when, in the old war, the Spaniards put a "San Josef" into their line of battle, she was mauled by three or four 74's in succession and was captured by the "Captain." When the French strengthened their line with the "Orient," the "Swiftsure" and the "Alexander" were equal to the destroying her; and I submit that, by a parity of reasoning, two ships of 7,000 tons, or three if necessary, might destroy a ship of 15,000 tons in the day of battle; while, during the months of blockade, they would represent two or three different ships, capable of being in two or three different places at the same time.

On the other hand, we know that the individual action of the "Victory" at Trafalgar was neutralized by the single 74-gun ship "Redoutable," which held her own till she was closed with by a second three-decker, the "Téméraire."

The controversy on this subject has been revived by Captain Mahan's account of the "Révolutionnaire" in the preliminary action of May 28, 1794. He says:—

As soon as the attack became pronounced, one of the French 110-gun ships, the "Révolutionnaire," took the extreme rear, and upon her fell the brunt of the action, which lasted till after 10 P.M. The British advanced ships were joined, after some time, by two more from the main body, so that the "Révolutionnaire" had to encounter, first and last, some half dozen hostile 74's.

The "Révolutionnaire" was nobly fought, and the concentration upon her, while eminently judicious, served to bring out vividly the advantage, which should never be forgotten, of one heavy ship over several smaller, even though the force of the latter may, in the aggregate, be much superior.<sup>1</sup>

It will be still fresh in your memory that our late and much lamented friend Admiral Long brought this instance forward, at the recent meeting of the Institution of Naval Architects, in support of his contention in favour of big ships. To me, the moral of it seems to tend in the opposite direction. The "Révolutionnaire" was certainly overpowered, and could scarcely have escaped capture had not Howe called off her assailants at dark. As it was, with 62 killed and

<sup>1</sup> "Influence of Sea Power upon the French Revolution," vol. i, p. 128.

86 wounded, her captain and three senior lieutenants among the number, and with all her masts shot away, she dropped astern in the darkness and eventually got into Rochefort, where her surviving officers and warrant officers were ignorantly put in prison for having cowardly deserted their post on the eve of battle. Five months afterwards they were released, but received no further satisfaction.<sup>1</sup> The "Audacious," also badly crippled, made the best of her way to Portsmouth: so that, as the actual and material result, the French fleet lost the services of a ship of 110 guns, the English those of a 74. Surely the advantage was with the English, and would probably have been more decidedly so if the English ships had been able to engage her by twos or threes together instead of singly. For, in fact, by attacking singly, the effort which ought to have been concentrated, was dispersed; it was the method familiarly described in our boyhood as "one down, t'other come on."

But, apart from size, the proposition I laid down some little time since, that victory depends on superiority of numbers, may very probably be contested. Let me, however, explain. There are, I conceive, two ways in which superiority of numbers may be exhibited. The superiority may exist in the gross number of the fleet, as, for instance, in Anson's victory off Cape Finisterre, or Hawke's victory in the Bay, both in 1747. The superiority of numbers was put into the hands of the Commanders-in-Chief by the Admiralty, and all that remained for them to do was to use the tools provided for them, in a workmanlike manner, which they did. Similarly, the superiority of numbers was provided for the French Commanders-in-Chief in the battle of Grenada in 1779, or in the battle off Cape Henry on September 5, 1781; and though they did not use their tools in a workmanlike manner, and did not win decisive victories, as they ought to have done, they were still able to inflict very severe checks on British arms, one of which—off Cape Henry—paved the way for a very grave disaster.

On the other hand, the superiority of numbers may be obtained by the tactical skill of the Commander-in-Chief, or by the blundering of the enemy, or by fortuitous circumstances. The Nile and Trafalgar will always stand out as pre-eminent instances of the first; Quiberon Bay as a combination of the first and second; Dominica as representing all three.

The First of June and Camperdown may, perhaps, appear exceptions. I think it is in appearance only. If the English ships did not concentrate their effort on some of the French or Dutch it is difficult to understand how so many of the French or Dutch ships escaped with little or no damage. But no such concentration was ordered. It therefore resulted from accident or instinct.

No ship was ever more stoutly fought than the "Brunswick" on the 1st of June, but she did not succeed in taking the "Vengeur," which yielded only after she had been well pounded also by the "Ramillies," been fired into by the "Orion," and was beset by the

<sup>1</sup> Chevalier, "*Histoire de la Marine Française sous la Première République*," p. 158.

"Alfred" and "Culloden." It was no easy matter in those old days to take a stoutly built and stoutly defended line-of-battle-ship, even if she was only a 74.

I should have liked to speak of many other questions that are raised by these admirable books: of convoy, which I agree with Admiral Colomb and Captain Mahan in thinking is by no means dead: of commerce destroying, which, as Captain Mahan conclusively proves, may irritate but cannot crush an enemy: of commerce-protection, which, he argues, can be best done by claiming and holding the command of the sea: of Napoleon's Continental system, which he has discussed in three splendid chapters; but the clock warns me that I have already trespassed on your patience. I will, therefore, in conclusion, only say to any of you who may not yet have read Captain Mahan's books, read them: to those who have read them, read them again; read them a third time; for in them you will find the best exposition of the blunders and the glories of our forefathers, the best explanation of the influence of sea power.

**THE CHAIRMAN:** The only remark I should like to make before we commence the discussion on this very interesting paper is with regard to the relative proportion of smaller ships attacking larger ships. I have read somewhere, I am not sure whether it was in the naval chronicles, that the Americans, in about 1812 or 1813, entered into a very elaborate calculation as to the relative value of frigates as against line-of-battle ships; and it was there laid down that two 40-gun ships were no match for a 74, and I think they went even still further, and said that three 40-gun frigates were not a match for a 74. The reasons were given, but I will not enter into them at present, but hope that in discussion some one may give any information he possesses on the subject.

**Admiral BRIDGE:** My only reason for rising is to call attention to the fact brought forward very clearly by the lecturer, that unless we can manage to arrive at some understanding on one particular point, we shall find naval literature not only occasionally misleading, but I am afraid altogether barren, and that is the necessity of having a distinct terminology giving to certain words particular meanings. I only need mention one word as being one which has an almost infinite variety of meaning, and one which is very rarely used by two people in a discussion in the same sense—I refer to the expression "blockade." The first thing that it appears necessary to do when people are discussing questions of blockade is to make perfectly certain what those who take part in the discussion mean by the word "blockade." The differences of opinion as to the meaning of the word are very old, as old as the time of Lord Nelson, because there is on record a celebrated letter of his which he wrote to the Lord Mayor of London, to say that it was a great mistake to suppose that the enemy's fleet had been blockaded in the sense of being kept in. Most people understand that it means to block up something, to keep something from getting out. But "blockade" also means exactly the opposite; it means to stop something from getting in; and the question of blockade, and the sort of blockade we mean must practically determine the questions as to relative numbers of ships employed in blockading. For instance, if you are blockading a port with the object of preventing things from getting out, it is quite clear you must always be in sufficient force to beat or to contend advantageously with what you are trying to keep in if it does attempt to get out. But suppose you are trying to prevent something from getting in, it may not be necessary, in the previous sense of the word, to blockade the port at all. Supposing you want to prevent corn coming from New York to an European port, where will it be best to try and prevent it, off New York, or off the port itself? that is to say, at one of two points 3,000 miles apart. Some of us may be of opinion that the best place to stop it would be at the place where it starts, that is to say, at the one point of which you are certain. Sup-



posing you put a force opposite New York or any trans-Atlantic port to stop a cargo of grain coming to a European country, would you be blockading that country? I presume that, in effect, you would be, and yet you might object to the use of the word "blockade" with reference to that particular operation. So that when such questions as these arise, and they will invariably crop up in the perusal of historical naval literature, as to the event of blockade and how you are to apply the lessons which are to be learned from the past to the future, it will be absolutely necessary, first of all, to come to some conclusion as to what is meant by particular words.

MR. PICKERING: I hold in my hand a small pamphlet entitled the "Story of the Battle of Trafalgar," by Mr. Laughton. In that pamphlet I find a statement on the boarding of the "Victory" at Trafalgar. I have been long familiar with most of the phases of that memorable battle, and I am ready to deny the fact on the authority of two officers who died high in the Service—the one Admiral J. Pasco, who, at Trafalgar, was signal-lieutenant to the "Victory," and the other Sir George Westphall, who was a midshipman. The account of the boarding of the "Victory" is of French origin, and appeared, in 1815, in a French work entitled "Victoires et Conquêtes," edited by a number of French naval officers, some of whom had seen service. One French artist has represented the main-yard of the "Redoutable" as projecting on the quarter-deck of the "Victory," with the French sailors on it, slashing left and right. The report taken from the "Victoires et Conquêtes" was reproduced some forty years ago in M. Thiers' "Consulate and the Empire," and created a certain sensation in England. It was to this effect, quoting from memory: "Très peu de temps après que Nelson fut frappé, le gaillard d'arrière, la dunette et les passavants du 'Victory' furent désertés par l'équipage, et offrit dès lors l'occasion que nous cherchions pour l'aborder. Le Capitaine Lucas du 'Redoutable' pensa dès lors à en profiter. Il commanda que la grande vergue fut amenée pour servir de pont pour l'équipage; mais la rentrée des deux vaisseaux rendait la distance impossible. Et en même temps le 'Téméraire' vint sur notre joue de tribord et nous enfila en poupe." I do not think I ever read an account in French naval history where a victory was not baffled by a convenient contretemps. All the various actions where the French have been defeated team with them, and even Captain Mahan adopts them in his last admirable work, "The Influence of Sea Power," notably in comments on the glorious 1st of June, where he duplicates the very statement in the action between the "Vengeur" and the "Brunswick." With the appearance of M. Thiers' book, Admiral Pasco wrote a letter to the "Times," which is of the very utmost importance as far as history is concerned, and one which no Englishman will question. It appeared in the "Times" newspaper somewhere about the year 1850, and, quoting from memory, it ran as follows:—"To the Editor of the 'Times.' Sir, I see it stated in Thiers' 'History of the Battle of Trafalgar,' that Captain Lucas, of the 'Redoutable,' lowered his main-yard to facilitate the passage for his men to board the 'Victory.' I believe there is no man living who can controvert this statement better than I can. Having been Lord Nelson's signal officer during the battle, and consequently on the poop the whole time, I owe it to my brave companions in arms on that glorious day, to state that no attempt was ever made to board us, and that we were always perfectly prepared to baffle any such attempt had it been made. I am, sir, yours truly, J. Pasco, Rear-Admiral." The letter was very much talked of at the time, but Professor Laughton has evidently never seen it or he would not have written as he has done.

MR. LAUGHTON: I have seen it.

MR. PICKERING: Then I would ask you to tell us, in reply, how it is that you state that the "Victory" was attempted to be boarded, and that some Frenchmen even reached the quarter-deck of the "Victory."

Captain EARDLEY-WILMOT, R.N.: I have only one remark to make about frigates and numbers. I am one of those who have advocated moderate dimensions in ships, but neither myself nor others ever had any idea that two frigates, or even three frigates, could cope with battle-ships. It was a question of battle-ships only, not frigates.

Captain CURTIS, R.N.: Under sail, a 74 might lie with one frigate on either side of her, and another, perhaps, might rake her. With steam, I think that three

small vessels might pass in succession and harass the larger vessel. I think there is something in that. We do not depend upon the wind now.

Admiral COLOMB: Sir, I take it that very few of us have got the heart to discuss a paper of this kind to-day, and I am afraid Mr. Laughton will suffer on that account; the paper having put forward the controverted points upon which it is almost a necessity of this country that they should cease to be controverted, I think he loses in the discussion of those points, and he loses the appreciation which we ought to have of the lucidity and the excellence with which they were brought forward, by reason of that terrible calamity which we cannot any of us get out of our minds. But as the discussion has gone on, I think one ought not to avoid making at any rate some remarks to show one's appreciation of what Mr. Laughton has said. To me that is, I may say, imperative, because for his remarks about what I have written and about the way in which parts of what I have written have been misunderstood, I owe him, and I hope a great many more will owe him, the heartiest thanks. He has rightly interpreted, I think, all the points which I have felt it my duty from time to time to bring forward in the interests of the naval position of this Empire. Taking the question of invasion, for instance, which is the first one he touches; there are reasons why I should not say all that is in my mind upon it, but there are general propositions which can be adverted to without transgressing in any way. I have held unquestionably, and I think that with very few exceptions the whole navy holds, that invasion of this country with an adequate force is impossible so long as we hold what we generally understand as the "command of the sea." The error that so many people have fallen into when this view is put forward is in supposing that we naval officers who hold that view think that because that view is true, therefore the military defences of this country may be given up absolutely. It is sometimes put in the broadest terms that officers who believe that England cannot be invaded so long as there is an adequate command of the sea do *ipso facto* say that military defences are of no value. Now I cannot see how the two things can be brought together. What we say as to the power of the command of the sea in protecting these islands simply is, that no adequate force can be assembled for invasion without our getting notice of it, and that in getting notice of it we should be in a position to prevent it crossing the sea, and that the knowledge that our possible enemies have of this fact prevents them from contemplating the idea of invasion in adequate force. If you have large military forces in this country it compels those possible enemies, if they think of invading at all, to think of invading with a very considerable force. If you drop the military defences of this country, if you drop keeping them at a somewhat high point, you might immediately tempt your possible enemies to undertake a considerable number, perhaps, of small expeditions, which, if they did no more, would give us a great deal of trouble. It would be very difficult, and always has been very difficult, to prevent small naval forces from passing almost under our naval noses. When in 1796 the invasions of England and of Ireland were contemplated, they were in the first instance contemplated in such a number of small expeditions. The only one of those that survived was the expedition of 1,600 men, or thereabouts, which laid down its arms to a few militia on the borders of the Bristol Channel, in February, 1797, but that was the remanet, so to speak, of several small expeditions which it was intended to put forward. The great expedition of Hoche was in a way the opposition to the idea of invading with numbers of small expeditions. The idea was thoroughly distrusted by the French Navy generally, and the Minister of Marine and one of the Admirals at Brest seemed to be the only two naval officers that could say a good word for it. The history of the escape of that expedition has never been properly written, but it is unquestionable, if you look into the facts, that it never ought to have escaped, that it was entirely the neglect of the officer in command of the British fleet off Brest that ever allowed that expedition to get out. It was, I am convinced, disbelief in the possibility of evading Colpoys which prevented the expedition from finding favour with the French Naval Officers. Then history, as well as common sense, tells us that so long as an efficient military force is kept up in a country it is no use thinking about invading it unless you have considerable military forces, and that those very con-

siderable military forces cannot be conveyed across the sea so long as there is an effective navy surrounding the shores which are intended to be invaded. Mr. Laughton does me justice again on the question of the fixed defences. Of course the fixed defences are absolutely necessary for all navies which do not intend to take the offensive, but for a navy which intends to take the offensive it seems to me that very moderate fixed defences are sufficient, and for precisely the same reason—because your ports cannot be attacked except by a large force, which the navy itself prevents from attacking; and therefore you are gilding refined gold if you spend large sums upon your fixed defences in defending that which is really already defended. But moderate fixed defences seem to me quite a necessity, because a number of small expeditions in exactly the same way might get at your ports and might do a great deal of mischief. Where I have apparently said that I thought very small naval forces would be capable of preventing the invasion which was supported by a very large naval force, the statement is not, as Mr. Laughton says, an abstract one. I was taking simply the case of Torrington; pointing out how it was with him, and showing also that unquestionably to prevent an invasion it is necessary that the naval forces opposing it should be actually superior. A force, however, nearly equal, or at any rate able to face the invading forces at sea, will probably prevent the enemy from contemplating the idea of making the attack. I am very glad that Mr. Laughton has brought forward the case that Captain Mahan mentions, the passage of Port Jackson, by Admiral Farragut, and the capture of New Orleans. I think anybody who reads that story carefully must be satisfied that Lord Wolseley made a very grave mistake, not only a grave mistake but a dangerous mistake, in putting the success down to "moral effect." There is one point which a military man, Sir George Clarke, has mentioned to me, which ought to be spoken of; that is that Fort Jackson was very much pounded by the shells, before Farragut passed up, and he thinks it is quite possible that it may be true that Captain Mahan has minimized the effect of the fire of Fort Jackson in enabling Farragut to pass up. But the real work that Farragut did on that occasion was to open fresh communications with New Orleans by taking his ships up past Fort Jackson in order to meet troops coming up by another route. Fort Jackson and Fort St. Philip became quite useless so soon as the new passage and the new communications were opened up. The work had been done when Farragut had passed them. With regard to the question of blockade, it has been held publicly several times that in my ideas and my remarks on blockade I have differed from those very distinguished officers who wrote the report upon the manoeuvres of 1888, which Mr. Laughton has quoted. I do not see the slightest difference. Those officers, as I understand them, were drawing the comparison between the methods of blockading by putting the fighting forces off the port; or keeping the fighting forces in a convenient harbour, while only the watching scouts were kept off the port itself. All that they seem to do is to show, and I think rightly, that most probably the latter would be the course that would be adopted in future blockades; that that fighting force would be kept effective in some secure anchorage as near as might be, while the watching force would consist of comparatively small vessels which would convey the information as required to the fighting force in its more distant harbour. The point, as I understand it, of the Admiral's report, was that you could carry out an efficient blockade with a smaller force in that way than you could if you attempted to place the fighting force off the port itself. It was not that you wanted more ships ready to fight in one case than in the other. It was simply that if you kept your ships off the port so many would have to be absent coaling, getting bottoms cleaned, repairing, and what not, that you could not, unless you had five to three, expect to have, off the port, a force equal to that which you were blockading. The last point Mr. Laughton takes up is the one which was so much revived by Captain Mahan having instanced the "*Révolutionnaire*" as a proof that few large ships were better than many moderate ships. I think he had not the means of looking into the attack on the "*Révolutionnaire*" with sufficient closeness to see exactly what happened. As a matter of fact there was no such attack as that he speaks of. The only ship that really attacked the "*Révolutionnaire*" was the 74 "*Audacious*." The "*Thunderer*," two other ships, and Sir Thomas Pasley's flag-ship attacked only at a very great distance, and Lord

Howe whipped up the "Thunderer" and her two consorts over and over again to come to closer quarters. Those ships were an advanced look-out squadron—four of them—sent out by Lord Howe, and they missed their opportunity, absolutely, you may say, of capturing the "Révolutionnaire," for after the signal was made for the general chase they allowed the "Audacious" and the "Leviathan" to come out from the main body of the fleet, and, as it were, to cut them out in the attack upon the "Révolutionnaire." But no ship made a real attack upon her except the 74 "Audacious," and the 74 "Audacious" killed and wounded that immense number of men which the "Révolutionnaire" lost while she herself lost only two killed and 19 wounded. But one of the points which throws the "Révolutionnaire" out of use in this controversy is the fact that she was attacked to leeward: she could hardly, if at all, use her lower deck guns. Our own flag-ship in attacking on the 29th in the same way soon found that she herself was hampered in fighting her lower deck guns. The water came in at the lower deck ports to an enormous extent and great numbers of men were kept bailing and pumping the whole time. On the 1st June, as we all recollect, she engaged to leeward, and I cannot help thinking it was that very question of the lower deck ports, and almost that alone, which made Lord Howe make the signal to cut through the enemy's line as he did, and made him choose the leeward position as he did. But if the "Révolutionnaire" was unable, as the best French authorities seem to make clear to us, to use her lower deck guns, what becomes of her superiority to the 74's? I have to thank Mr. Laughton most sincerely for a most admirable and interesting paper, and especially, as I say, for his personal kindness to me in putting so many points right.

General GOODENOUGH: I am very glad indeed to find, from Admiral Colomb's remarks, that the efforts made by the army, and the preparations made for the defence of our ports, have been, if I may say so, rehabilitated; if, indeed, they required rehabilitating. I think the efforts made by officers who are seriously engaged in studying the work for the defence of our ports have often been a little bit damped when they have come in contact with naval officers. They have then often found the necessity of the whole thing pooh-poohed; naval officers having sometimes said that they think we military are not doing any very serviceable work. I am glad on that account to hear Admiral Colomb's very clear and lucid exposition of the value of defences. He shows that they compel an enemy to employ an adequate force should he come to attack them, which adequate force is that which the fleet would keep off, while the numerous minor attacks, which otherwise might be more successfully pushed home, would be very difficult to encounter.

Professor LAUGHTON: I myself, sir, experience that terrible shock which Admiral Colomb has so well described as having come to us with the appalling news which we have just received. My first impression was that the lecture ought to be postponed, but I went on with it in deference to the wish of the meeting. As to the remarks that have been made, I do not remember the passage in the naval chronicle to which you refer; but when I spoke of small ships engaging large ones, I said "within reasonable limits." Frigates as against 74's might, perhaps, not be considered as within reasonable limits; at the same time, I may say that there are instances of frigates having engaged 74's without being destroyed or even defeated. The most notable instance which occurs to me, an instance commonly overlooked as it led to no definite result, is the engagement of six French frigates, commanded by M. Sercey, with two 74-gun ships, the "Arrogant" and "Victorious," on the north coast of Sumatra, on September 8th and 9th, 1796. James suggests that, under certain more favourable circumstances, which he does not define, the 74's ought to have captured at least two of the frigates; but, as a matter of fact, they did not do so. Besides this, however, there are plenty of instances of frigates engaging line-of-battle ships taken at a disadvantage, such as that which Admiral Colomb referred to in the case of the "Révolutionnaire," unable to use her lower deck guns. During the last century we lost more than one 60-gun ship in that way: and the stubborn defence of the French frigate "Minerve" against the "Courageux," in 1781, is a very striking example of it. And, again, there are many instances of large ships, when trying to escape from a superior force, being detained by the action of one or more frigates till the line-of-battle ships could come up. We lost the "Berwick" in that way in 1795; the French, in the same way, lost the

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"Guillaume Tell," in 1800. The story which Mr. Pickering referred to has really very little to do with the subject of my lecture, though it is always interesting. I may say, however, that though the testimony of Admiral Pasco and Sir George Westphall is, of course, perfectly trustworthy as far as their opportunities went, I differ from Mr. Pickering in supposing that they knew the mind of a Frenchman better than the Frenchman himself. I think probably Captain Lucas knew when he was preparing to board the "Victory" better than a midshipman, or even a lieutenant, of the "Victory" did, more especially as, at the time, that midshipman and that lieutenant were lying in the "Victory's" cockpit severely wounded.

Mr. PICKERING: Captain Lucas was mortally wounded, and was dying at the time. Besides, at that time the "Redoubtable" could not have fought her lower deck guns: she had closed her ports to prevent her being boarded by the "Téméraire" and the "Victory."

Professor LAUGHTON: I see no reason whatever to doubt the French assertion that they did mean to board, but were prevented; and that this was believed on board the "Victory" at the time is proved by the fact that the "Victory's" men were called on deck to repel boarders, and that many of them, including Captain Adair of the marines, were then shot down from the "Redoubtable's" tops.

Mr. PICKERING: Pasco was present the whole time: he was always on the poop. Captain Brenton mentions it: he says she fought the "Victory" entirely with her small arms.

Professor LAUGHTON: I think the point which Admiral Colomb brought forward about the "Révolutionnaire" not being able to use her lower deck guns is very interesting and important. It was a very general failing of three-deckers all through the century; so that, in battle, the three-deckers were often less efficient than the 74's. Off Toulon, in 1744, Matthews wrote very strongly indeed about them. Possibly before very long we may be able to bring some of Matthews's very interesting letters to light. There are, I think, good hopes that we may. It will then be seen what a horror he had of these big ships, and how he described most of the 80- and 90-gun ships as unable to "make use of their lower tier if it blows a capful of wind." I am pleased to find the remarks on my paper so favourable. I have not wished to put forward my own opinions so much as to accentuate some of the opinions expressed by Captain Mahan and Admiral Colomb. I may say, incidentally, that a short time since I had the pleasure of receiving a letter from Captain Mahan, in which he spoke of having different opinions at different times; that he thought, in military questions, it was not the mean of different opinions which was to be presumed to be the right; that, more probably, the right is with one or the other of the opposing opinions, according to the different circumstances, but that the mean in all cases is probably wrong. Students of history and strategy and tactics, he thought, should make themselves acquainted with both sides of a question, and be ready, when the time comes, to use that one which is best adapted to the circumstances. I thank you very much for the kind way in which you have received my paper.

The CHAIRMAN (Sir Vesey Hamilton): It only remains for me to offer a few remarks by way of summing up this discussion. One point I should like to mention with regard to our losses in the early part of the American War. I happened to come across, not long ago, a report from the Secretary for War to the Congress in 1796, in which he stated that the six frigates that they were then building were superior to those of any other European Power at that time; that their sailing qualities were so good that they could not be brought into action except on their own terms, and that in bad weather they were a match for a two-decked ship. (He must have alluded to the lower deck ports having to be closed.) That shows how very carefully the Americans had thought out this matter, and that we, unfortunately, towards the latter part of the war with France, had, as Professor Laughton observes, taken to gimcracks instead of thinking about fighting. Nelson observed once that the naval officer, unlike the military officer, could not have any fixed plans; he must be prepared for every contingency that may occur, perhaps to-day, to-morrow, a week or a month hence or never, and amongst those who prepared for the contingency that might never have occurred was Captain Brooke, of the "Shannon," by training his men so admirably to gunnery; and let me say that the

"Chesapeake" must have been in very good gunnery order—it is a great mistake to suppose she was not. The five broadsides discharged, three from the English, two from the American, killed and wounded more men than ever were killed in any other five broadsides: 150 men were killed and wounded in about equal proportions as to broadside fired, i.e., English two-fifths, American three-fifths. Captain Brooke was not an officer who had previously had the opportunity of distinguishing himself. I do not know what he might have been if he had had further opportunities, but he had previously been employed in humdrum work, such as protecting convoys, still he always kept in view that the golden rule was to be ready for anything that might turn up at any moment. There is another point for which Professor Laughton deserves our gratitude, that is, for bringing forward that new matter with regard to the important part played by the navy in the Civil War, according to Gardiner's history. I never read it before. It is certainly very conclusive. Another point on which he dwells very strongly was the proposition of Lord Dundonald to take possession of all those French islands in the Bay of Biscay, and from them to harass the trade and coasts of France, and in that case we should have been indebted to our friends of the military service for the protection of those islands from which we should have carried on what the enemy would have called our nefarious proceedings. That is alluded to in Burrow's "Life of Lord Hawke," in which he says 10,000 or 12,000 men embarked on British fleets harassing the French coast prevented the French sending 100,000 men to Germany, which probably would have turned the scale against Frederick the Great. I am sure I am not taking too much on myself in saying how much we are indebted to Professor Laughton for his interesting paper.



Wednesday, June 28, 1893.

MAJOR-GENERAL H. LE G. GEARY, C.B., Commanding R.A.,  
Southern District, in the Chair.

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## COAST ARTILLERY PRACTICE.

By Colonel J. B. RICHARDSON, R.A., Commandant, School of  
Gunnery.

*Reason for want of interest in Coast Defence.*—There is a comfortable belief, deep seated in the mind of the British public, in the inviolability of our shores, and it is probably due to this feeling of security that but small interest is generally exhibited in coast defence questions, and that the organization for that defence has taken the remarkable form in which it is at present crystallized.

*Necessity for careful preparation.*—Coast defence is capable of easy solution as long as the absolute command of the sea is in the hands of friends. Neither the open coast nor sea fortresses can be seriously attacked, though irritating raids are possible or even probable. But party government renders the keeping up of an all-powerful fleet a difficult matter, and modern invention has produced such a change, not in the general principles but in the details of sea fighting, that, in the absence of actual experience, a feeling of insecurity is engendered in many thoughtful minds, which gives force to the argument that it is unwise to put all the eggs of defence into one basket, and renders a careful preparation for coast defence a sound step for a rich nation to take.

*The two forms of Coast Defence.*—Coast defence, treated merely with regard to land forces, divides itself into two distinct headings:—

1. The defence of open coasts from landing in force.
2. The defence of coast fortresses, and the land and limited area of sea immediately adjoining.

*Coast Defence not practised.*—With the artillery practice of the first of these problems I do not propose to trouble you. The defence of coasts outside the influence of coast fortresses is, in the absence of naval protection, best undertaken by a field army under Generals skilled in ordinary field warfare. Practice in this work is, no doubt, desirable, and it is somewhat remarkable that the peace manœuvres of a nation like ourselves, with such an extent of coast line, nearly all run in the direction of fighting imaginary battles inland, and rarely assume the form of coast defence in conjunction with the navy. There is, however, little or nothing technical in this form of defence.

*Technical knowledge needed by Officers in command of Coast Fortresses.*

—With coast fortress defence it is different. Here it is most important that officers in command should have a considerable amount of technical knowledge, for a large proportion of the troops they deal with need much technical knowledge to make good use of the instruments given to them for defence. No portion of the army so much needs the application of discipline, as defined by Hamley. He says:—

“Discipline means cohesion of the units and suppleness of the mass. . . . It means the most efficient combination of many and various parts for a common end.”

*Want of unity in our system.*—In our service the defence of a sea fortress is carried on simultaneously by several necessary branches. Where this is the case there is a tendency for each branch to work entirely for its own hand, regardless of the rest, although all are working for a common cause. Every effort must be made to counteract this tendency. Information, vital to the very existence of one portion of the defence, is apt to be withheld from other portions on whom its existence depends.

*Coast Fortress Defence by the Navy.*—Now and then we hear the cry (rarely, or never, I think, from the navy itself) that these and other anomalies should be knocked on the head by copying foreign nations, and handing over the defence of coast fortresses entirely to the navy. If our navy intended to relinquish the command of the sea, there would be some reason in copying the system of nations who will probably shut themselves into their ports in war-time; but is there any doubt that the rôle of the British navy is to shut up foreign fleets? When it ceases to do so and takes to doing land work, the end of our great Empire will be within measurable distance.

*System bad, but simple remedies only needed.*—The organization for coast fortress defence in these islands may be a little sick, but it seems hardly necessary to prepare for its funeral before trying cheap, simple, and common-sense remedies. Small changes in organization and an alteration in the system of command might do much, but if this fails, unification of the various branches into a coast defence corps would, without doubt, bring about the “efficient combination of many and various parts for a common end.”

*Practice of Coast Artillery mainly dealt with.*—This lecture deals with the practice of one of these separate branches; one which, so far, only deals with guns and aerial torpedoes. A fair definition of the goal of coast gunners is given in the new “Garrison Artillery Manual”:—

“The sole test of a perfect artillery organization is the power exhibited by the defenders of any unit, whether section, fort, group, or single gun, to direct on an indicated target, at the shortest possible notice, a rapid, accurate, and effective fire, and to maintain that fire until its object is secured.” Let us see what approach has been made to this ideal.

*Great advance in last decade.*—Probably no portion of the British army has, by internal change of method and organization, during the past decade, taken so close an approach to a new departure, or made so remarkable an advance in its preparation for war, as the coast

artillery. It is the only arm which has pushed itself markedly in advance of the corresponding branch of other nations, while it has derived less help from their methods. More than any other it has tackled the difficult problem of utilizing but partially trained Militia and Volunteers to the best advantage. It has depended little on the pomp and glitter of parade; indeed, it was not until coast artillery were relieved from battalion drill and ceased (as infantry) to swell the ranks on show parades, that any real advance in their own profession was possible. During a whole century they realized the impossibility of their being made both first-class artillerymen and tip-top infantry soldiers. Coast artillery has, in fact, pushed its way on, with great determination, in the face of many disadvantages. It has never had, and from the nature of things never will have, the newest possible armament: this is rightly given to our first line of attack—the navy; but it may fairly claim to have developed new beauties out of old weapons, and to have enabled these to hold their own with the new.

*Reasons for Coast Artillery being unattractive.*—Coast artillery has never been made an attractive service; though its work is often extremely interesting to its votaries. Its doings are little seen and never rewarded. No honours, titles, or promotion, out of the ordinary run, fall to the lot of the coast artilleryman, while blame and censure are always before him. No clear range can be secured for his shooting, as is the case with other arms; and all ranks go to their practice from day to day with a heavy responsibility on their shoulders. If, after hours of weary waiting for a clear range, any link in an extensive chain chances to give way and an accident, or anything near an accident, occurs, the British public cries loudly for a victim, and the coast artilleryman is apt to be offered up. He has had, in the past, little or nothing to do with the position in which his guns are placed; but if, owing to faulty position, he chances unwittingly to bombard ships or adjacent or opposite land, his is the meed of blame.

*Difficulties met with by Coast Artillery the immediate cause of improved methods.*—The trials of the coast artilleryman are not enumerated merely to suggest that he is an ill-used being, but to show that his merit is great in that, in spite of disadvantages which would have discouraged less sterling metal, he has brought his arm into a condition of efficient organization; and that this satisfactory result would probably never have been attained but for the practice which he has been compelled to carry out under conditions which, unlike those of other arms, impose a heavy load of responsibility, even during peace, on the shoulders of its leaders. "Necessity is the mother of invention," and the necessity of some working organization has been impressed on the minds of coast artillery by the risks they run during peace practice. They have produced the necessary system. There is no pretence that it is perfect, but it is workable.

*Personal retrospect.*—If you will excuse the use of the personal pronoun for a brief space for convenience in relation, a short personal retrospect may help to bring home more forcibly the difference between coast artillery practice of the present day and that of 10 years ago.

In 1883, circumstances necessitated my exchanging from field artillery, and I was given the command of the artillery sub-district which contained the Spithead sea forts. Several years had elapsed since I had been a garrison gunner, and I made up my mind to resume the study of coast artillery work as a humble learner. I soon found, however, that there was little new to learn. The one thing my officers looked forward to was a change into the then more favoured branches of their corps. Armaments had got a little heavier, but, in their use, there was no advance. Ammunition was stowed anyhow, unsorted; that is to say, cartridges with quite different shooting powers were mixed up in the same magazine, and shells of the same nature, but of different shapes and sizes, were placed together for use. Guns in casemates were still laid over sights both for elevation and direction. No practical means were provided for the Commanding Officer to enable him to ascertain the direction in which any given gun could fire. Range-finding was both slow and uncertain. Nothing was provided to enable orders, direction of targets, ranges, &c., to be passed from the top of the fort, or other place where a target could be seen, to the guns in the gun floors; or instructions to the magazine floors, except some miserable speaking tubes, the use of which irritated everybody who had to deal with them, or the alternative use of a large proportion of the available force as orderlies on ladders, to pass the word from mouth to mouth during all the noise of firing, hammering of levers, and shouting of executive words of command, which was then part of the drill. With communications in a mere single fort in so defective a condition it will readily be conceived that I could exercise absolutely no control in action over the other four forts, for whose doings I was supposed to be answerable, and no combination between these was possible. This, at the time, did not much concern me or attract serious attention, as the whole of the men of my division, supplemented by all the force I could borrow from a brother lieutenant-colonel, were not sufficient to man completely one of my forts. Militia and Volunteers were not utilized as they now are.

The mere gun drill of individual guns was very good; but this, the elements of gunnery, and the moving of guns, were nearly all that was taught. Stationary targets, generally barrels with a flag on them, were alone provided; and moving targets, except when these chanced to drift, were not recognised. An old tag, only partly at my disposal, was the sole means of transporting my troops to the forts, or of enabling the forts to be visited.

*Station Practice.*—Very soon after I had taken up my command, I was ordered to carry out what is called "station practice," a most wise and useful expenditure of ammunition, which consists in firing three rounds from every heavy gun which can be safely fired, every two years, to test the working of guns, mountings, and the fittings of the forts generally.

*Experiences of a day's firing.*—I shall never forget the experiences of that day!

The usual barrels were moored as targets. I could easily dis-

tinguish them from the top of the fort, where, as nothing was laid down for my guidance, I took my station; I soon found, practically, that they were not as easily seen from the guns. After much speaking through tubes and sending verbal and written messages, it was reported that certain guns could bear on one of the targets which I had endeavoured to indicate, and of which I had given the range. Word was passed that the guns were loaded with Palliser shot, and as soon as I saw that the range was perfectly clear in the direction of the indicated target, the order was conveyed through the speaking tube to fire. After what seemed to me a long delay (caused by passing the order), a gun went off. To my horror I saw the huge shot going wide of the mark in the direction of a buoy, not very far from which were some boats. It pitched, fortunately, over the buoy and well clear of the boats. There were recriminations, but owing to want of real organization it was difficult to justly affix the blame. The buoy instead of the barrel had been aimed at.

After a long delay, I was able to point out the targets from the guns themselves; their bearings on the traversing arcs were marked, and practice recommenced.

Later on a man-of-war came along from behind. When I considered that she was nearly within the limits of danger, I sent down messages to stop firing. Owing to the length of time occupied in conveying the order, just as she was passing fairly close to the fort, a 38-ton gun loaded with shrapnel was fired. The shell burst at the muzzle, the sea was churned with splinters, &c., and I looked anxiously in the direction of the ship. I could see the people on the bridge come to the side and look towards the fort; and I also saw one large fragment going high in their direction. Fortunately for me it fell well over the ship, and nobody on board seems to have been looking that way, or I should have heard more about it.

After this day's experience I saw that my commission, and even my liberty, was not worth a day's purchase unless I devised some system, which did not then exist, to enable me to control the fire of guns and carry out practice with safety. I have laboured almost continuously at the task ever since, in the fullest sympathy with officers who are called on to assume the responsibilities of heavy gun practice, but I have found it very difficult to bring home the necessities of the situation to those who have never had to assume these responsibilities of fire from elaborate forts into a crowded seaway.

*Organization, 1883, non-existent.*—Organization, other than that in pure drill, was non-existent.

*Contrast 1891.*—Contrast this condition of affairs with the organization of coast artillery which existed two or three years ago at Plymouth. I mention this somewhat antique date because since then a change in the sequence of command has been made.

*Description of Organization at Plymouth.*—The fortress was divided into three sections, two of which had to do with the sea front; and it is only with the latter that we have to deal.

*Section C.R.A.*—Each of these sections had a C.R.A., a lieutenant-colonel, who was responsible for, and with a very little better means

would have been actually capable of, controlling the fire of any group of a very large number of guns, mounted in many forts, dispersed over some miles of sea coast. With well trained subordinates it was, however, quite unnecessary for him to exercise so elaborate a control. His function was preferably to assist, and not to worry, those engaged in practice, by using his head as one free from details, watching the course of events, interfering as little as possible when all was going well, but with full powers and opportunities of checking wild fire or of indicating any action he thought advisable, particularly with reference to causing the fire of forts to support each other. He could, in fact, switch fire in any direction he thought best.

*C.R.A.'s Station.*—He was supposed to have a station, covered in, and supplied with charts and various appliances, from which he could observe all the water commanded by his guns, and indicate exactly what he wanted them to do, but only in one case was this nearly arrived at; while it is evident that in any section comprising many miles of coast line there must be cases in which the forts will see their targets sooner and better than a sectional C.R.A. can hope to do—an additional reason why he should be chary of interference. Unless great tact is used, a long line of wire is but a poor prop for discipline to rest against.

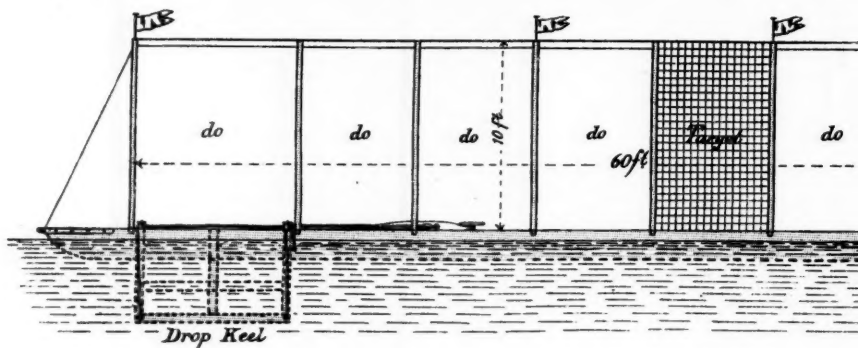
*Fort Commanders.*—The immediate subordinates of the section C.R.A. were his Fort Commanders. Each of these had the entire command of a fort or battery of guns, and was responsible to the section C.R.A. for fighting that fort to the best advantage. He, too, was supposed to have a station in, or as near as possible to, his fort, with range- or position-finders, however far away, in easy communication with him, worked by his staff under his direction. Good communications with every part of his command were very necessary, but were seldom forthcoming, and generally temporary expedients were rigged up by, and too often at the expense of, the artillery themselves. If any one of his appliances broke down, the fort commander was on the spot, and could take up any means available of continuing fire to the best advantage. Thus at target practice the position-finders were sometimes put out of action, and the fort commander, without much delay, continued fire with depression range-finders. He was deprived of these in turn, and of his communications, and repaired to the gun floors, when he was in no worse a position than was a C.O. in 1884. A fort commander, with the aid of his staff, had to watch his target, indicate it to his groups, judge its speed, range his guns, and, having a far less area of sea to deal with, go into fighting details to a much closer extent than the C.R.A. of the section.

In large forts the fort commander had the next senior officer or officers to assist him, to be ready to take his place in the event of accident, or to temporarily occupy his station if he chose to visit any portion of his command. They were called sub-commanders, and he generally employed them as his substitutes during target practice, on the gun floors of casemates, or in the more distant parts of large open forts, to prevent any friction between lesser units and to see

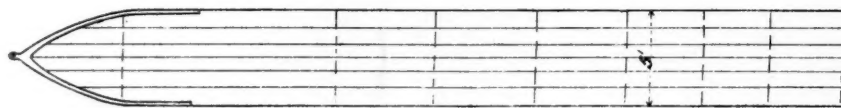




PORTSMOUTH.

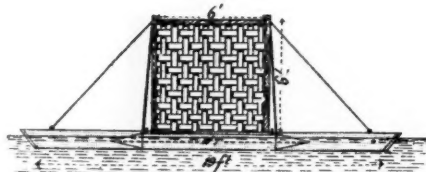


SIDE ELEVATION.

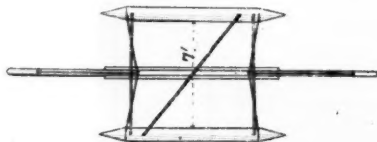


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SIDE ELEVATION.



PLAN.



FIG. 4. TOWING TARGETS.

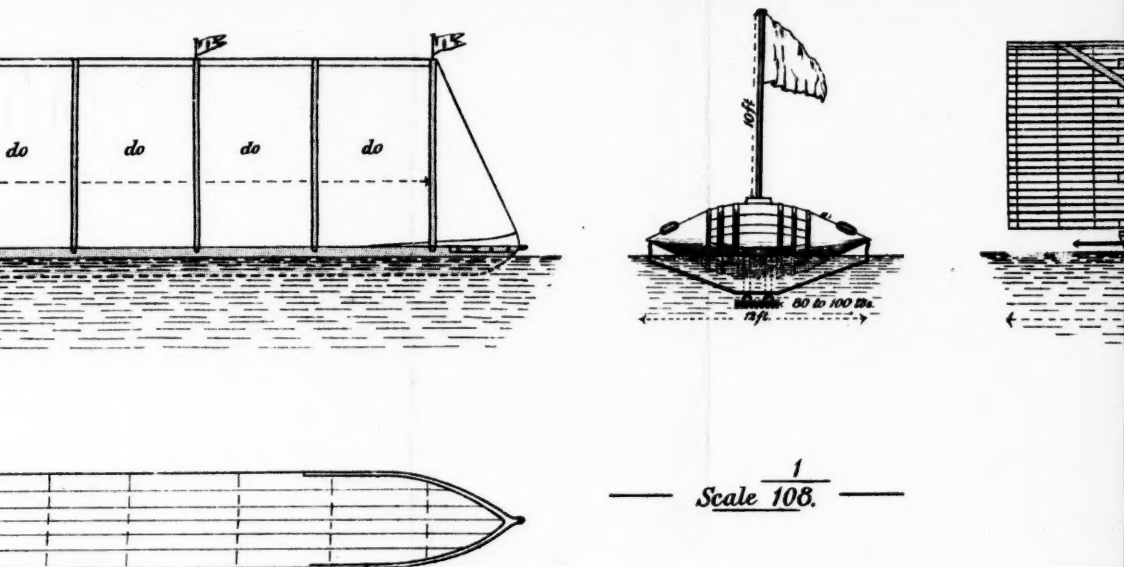


FIG. 1. GROUP SYMBOLS AND GUN NUMBERS.

ORIGINAL DESIGN

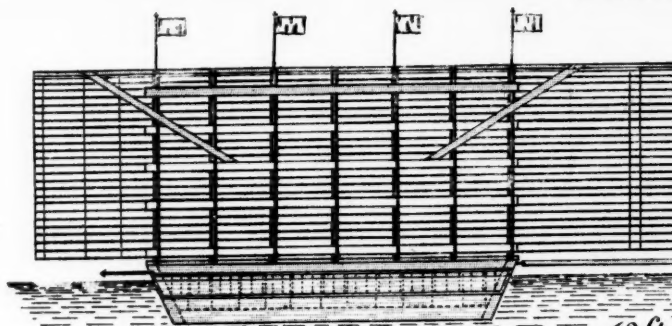


AS NOW IN USE



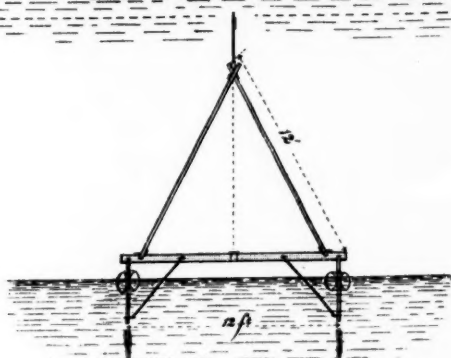
# TOWING TARGETS.

PLYMOUTH



SIDE ELEVATION

Scale  $\frac{1}{108}$  —

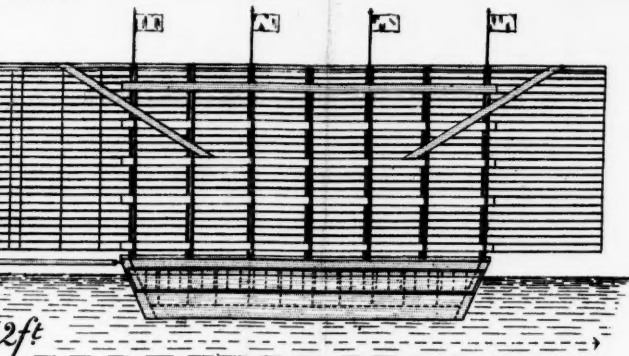


END ELEVATION  
OF PLYMOUTH TARGET.

## GUN NUMBERS.

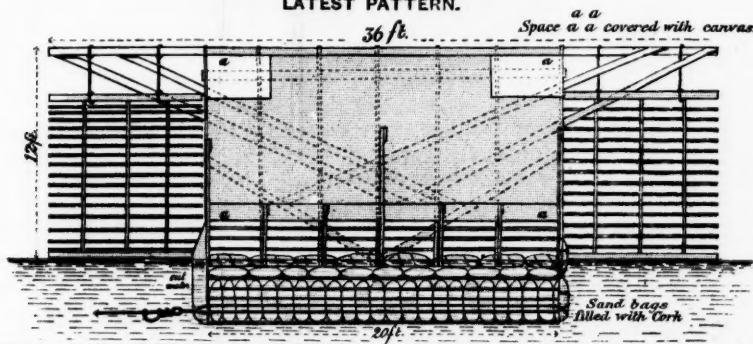


MOUTH.

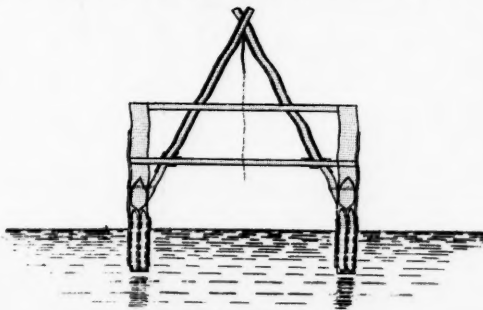


ELEVATION.

COLONEL RICHARDSON'S  
LATEST PATTERN.



SIDE ELEVATION.



END ELEVATION.

FIG. 2. FORT MANN.

2 GROUPS, ♡ C, FOUGHT

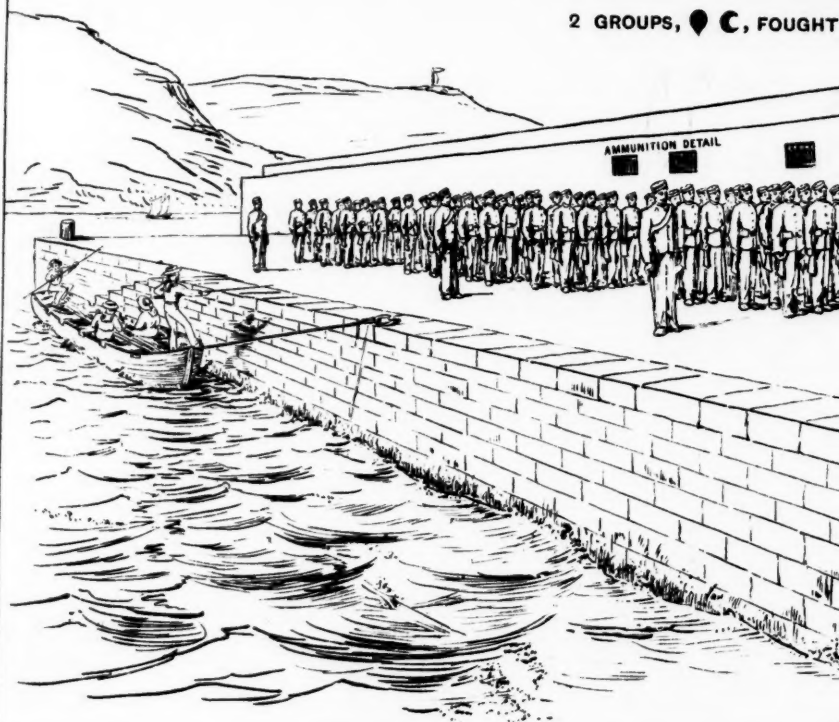
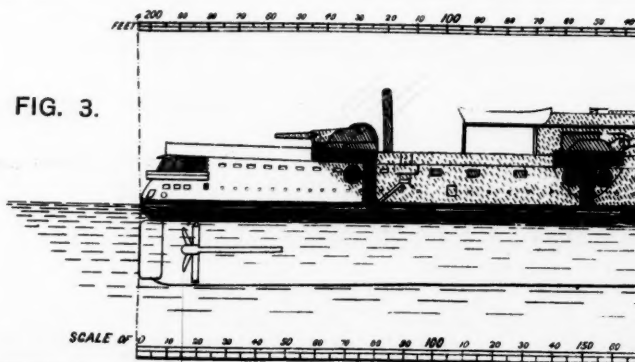


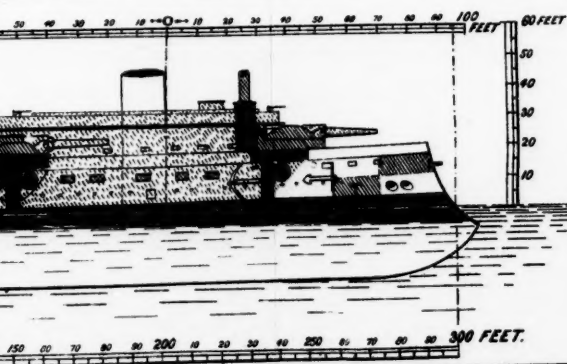
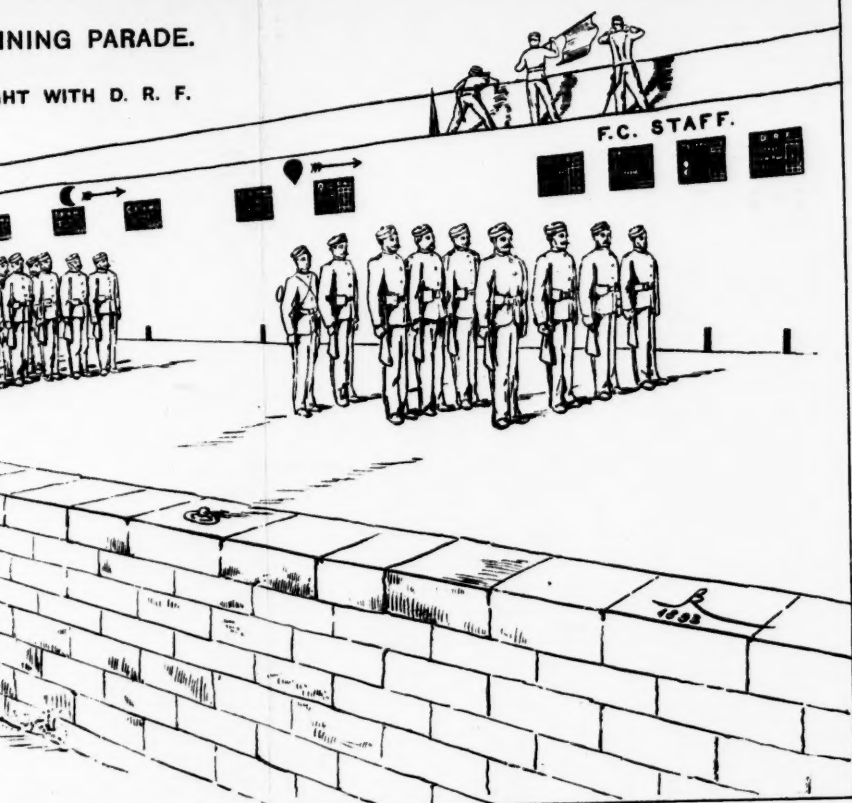
FIG. 3.





NING PARADE.

HT WITH D. R. F.





that the range was clear, which can only be decided with safety from the neighbourhood of the guns.

*Groups and Group Officers.*—The guns were divided into groups, each generally consisting of four or less guns, and forming a subaltern's command. Each subaltern thus became the "Group Officer."

*Numbering Groups.*—Each group was numbered in succession from the proper right of the fort and had a symbol, easily seen at a distance and in comparative darkness, consisting of a figure, the number of points on which indicated the group number (Plate 28, Fig. 1). Everything connected with this group that was peculiar to it was marked with this symbol, so that the most untrained artilleryman, if he once knew the form of his symbol or its number, could hardly help finding his way in the most complicated fort. Militia and Volunteer Artillery were taught these symbols in their drill sheds.

Unfortunately this simple system of group symbols has been complicated by adding letters as well as numbers to the groups. And this has lately nearly led to accident at practice. The groups instead of being numbered from the right, from 1 upwards, are now lettered A, B, C, D, &c., but there is a great similarity of sound in B and D, and mistakes are made, while the form of symbol has no reference to the letter.

As it matters little as regards safety if a mistake is made in the sequence of guns in groups, probably the best arrangement would be to revert to numbering the groups and to letter the guns, the system becoming :—



meaning A. Gun Group I. B. Gun Group II. A. Gun Group III, &c.

Every gun had one or more trained layers, and laying was enormously simplified by these men having to perform but one operation, viz., to lay correctly for line, elevation being given by clinometer or arc on which ranges were marked.

Each gun was commanded by a No. 1 or gun captain, who was responsible to his group officer for its correct service.

*Magazine Officer.*—The officer in charge of magazines was, or should have been, in direct communication with the fort commander, so that, in the event of the guns being short of supply, the latter could adjust the matter on complaint being made; again, avoiding friction between units. The fort commander could give him early and direct intimation of what nature of projectile he proposed firing, or of any change, so that he could prepare for and prevent any delay in ammunition service.

*Permanent Staff.*—Each fort had a small permanent staff, under a master gunner or acting master gunner, quite independent of the troops allotted to it, who knew all about its working and stores, and was answerable that these were kept complete and in working order.

Somewhere in or near each fort or place of landing, a place of parade (Plate 29, Fig. 2) was carefully arranged, with group symbols and the number of officers and men required for each particular duty painted up, room being allowed for the troops to fall in opposite to these, while, close to the actual stations of the various units, arm racks were provided, in which each man on reaching his station deposited his arms and accoutrements in such order that they could readily be snatched up in the event of surprise on the land side.

Even had a body of undisciplined recruits arrived, it was possible to marshal them in a few minutes, while, by the aid of the symbols they would have found their exact places in action, and all without reference to a paper. These marked parades were found very advantageous in manning at night. It was quite easy to ascertain whether any man was missing from his place, and confusion was avoided.

*Difficult Range at Plymouth the cause of good Organization.*—The evidence taken before the Board of Trade Committee on target practice seaward (of which I chanced to be a member) tended to show that the coast artillery have nowhere a more difficult range to deal with than at Plymouth. It is frequently crowded with boats, and advantage has to be instantly taken of every chance which offers of a clear space for fire. Under such difficult conditions it was almost a certainty that a system developed at Plymouth would prove the most practical. The coast artillery there could not afford to toy with abstract theories in the face of real danger.

*Volunteer Brigades.*—Volunteers in large numbers were assembled in the fortress by brigades for a week's training. Most of these had never even seen guns similar to those they found in the forts, though they had learnt the elements of drill with old pattern guns in their drill sheds. They were trained for five working days, and on the sixth were committed to practice; the sectional C.R.A.'s at first in fear and trembling, but, as confidence in the working of the system developed, at last boldly, trusting them to fire at towed moving targets, from several forts combined, in this difficult water area. They did so without accident, and made at times excellent practice, a result absolutely incompatible with the conditions which existed in 1884.

*Militia Brigades.*—Militia regiments also came in considerable numbers, but, as these were available for a month or so, the pressure of training was not so great, and, though no better practice, if as good, resulted, the actual discipline was better, and, consequently, those directing fire had certainly greater confidence.

*Characteristics of Volunteers and Militia Artillery compared.*—Comparisons are somewhat invidious; but, as it may help those concerned, I may mention that artillery officers engaged in solving the problems of rapid training found that, on the whole, Militiamen needed more driving, and were much more difficult to teach than Volunteers, who always worked very hard and enthusiastically; but that the Militia Officers had a far better grip of their men, sooner grasped the chain of responsibility, and needed less close supervision and coaching when

placed in command. The earlier experiments in giving either class a free hand with really heavy guns were very anxious work; and it would be better for coast artillery if the officers of auxiliary forces were more in advance of the training of their men. Other peculiarities were that the Volunteers never took very kindly to the dreary work of the magazines; Militia were apparently quite happy there. Volunteers appeared to love night alarms; Militia would have done without them without complaining.

*Existing Conditions of Target Practice.*—The conditions under which target practice is at present carried out differ apparently only in name from the system last described, but, in reality, a somewhat vital alteration in the chain of responsibility is involved, which may lead to danger at target practice, and will certainly delay coast artillery from attaining the ideal organization laid down for them in their Manual.

*"Battery Officer."*—New officials have been created, and the chain of responsibility has been lengthened but not strengthened. The first of these are "battery officers." These are expressly said to have no fire control, no fire direction. They are not to interfere with group officers firing, nor with ammunition officers; are not to concern themselves with the target nor with the order or rate of fire. It is possible a battery officer of an active and energetic disposition may, with the best intentions, seriously impede work, for lack of something else to do.

*"Fire Commander."*—The "fort commander" is abolished, and the new creation is a "fire commander." It is laid down that "he exercises fire direction over one or more forts" (which approaches the duties of the section C.R.A.), and that he may be assisted in the duty by one or more sub-commanders having fire direction under him.

*One Fort may have two Fire Commanders.*—There is a converse which appears to have escaped notice, viz., that there are instances under this system where one fort will be burdened with two or more fire commanders. As they will probably be each some long distance away, forts so circumstanced will have sub-commanders. Will two sub-commanders, under two separate fire commanders, at the same fort, be likely to strengthen discipline and add to the facility and safety of practice? On the other hand, if there is only one sub-commander, will he not have rather a rough time of it between two superior officers? Communications are very delicate, and the temptation to find them out of order would prove sometimes too strong. Possibly with experienced and well-disciplined troops it may work for a time, but the large majority of those who work our forts cannot be so described.

*Resistance to current of Discipline.*—On the test board of an electrical system, each key added increases resistance to a current which flows best where no keys are interposed. So it is with the current of discipline. A commanding officer should be placed as close to his troops as circumstances will permit; they will fight best when he, who can praise and recommend them for reward, witnesses

their deeds. Placing a commanding officer at a great distance from his troops, and adding officers to filter his orders through, adds to the difficulty of fixing responsibility in the event of accident, or faulty shooting, at target practice, which is a valuable test of good discipline. Fire commanders, if far away, will find the control of partially trained artillery more difficult, for they will not be able to visit them, and danger and anxiety at target practice will ensue.

*Position-finding Instruments used as Range-finders.*—Quite lately, however, a great concession with regard to the use of position-finding instruments has been made to the coast artillery gunner, and it is now recognised that he may use them as he uses a depression range-finder, which, though it has always been comparatively very badly found, has hitherto, from its simplicity, and from the rapidity, accuracy, and safety of the practice carried on with its assistance, always been a favourite with coast artillery, though they have never been supplied with a sufficiency of these instruments to enable them to fire at more than one of two targets, even though 8 or 10 groups were in action. This concession will have far farther-reaching results than is generally recognised. One position-finder has usually to work a few guns grouped together. Group firing by prediction—in which the position-finding operator predicts a point which a target will cross, sets his telescope on that point, sends down automatically the necessary elevation and bearing to the group of guns, and fires them by electricity if the target comes on the guessed spot—has been well described as “a method of ensuring inaccuracy of fire,” for the guns either fired parallel to each other (though they might really be further apart than the ship or target is long), or their fire was concentrated for one particular range, when displacement and other causes of inaccuracy were involved, unless each gun had a position-finder to itself, an alternative complicated in working and expensive both in men and stores. With the position-finder worked as a predictor, it was useless to attempt the destruction of a given portion of a ship. Coast artillery are now within measurable distance of having it in their power to do so, and, thanks to the labours of Captain Orde Browne, they will soon have the chance given them of selecting not only a particular ship as a target, but the most vulnerable part of that ship, and of pouring on to that portion a hail of concentrated, as opposed to a slow dispersed, fire.

*Diagram of War Vessel, with vulnerable areas indicated.*—Here is a diagram (Plate 29, Fig. 3), taken, with no attempt at accuracy, from “Brassey’s Naval Annual,” but shaded with red, and with still deeper red spots, representing favourable places for attack in proportion to the intensity of the colouring.<sup>1</sup> An officer, responsible for fire direction, can choose at a glance which section of the ship offers him a chance of doing the most damage, according to the quality of his guns, and he has the power of so ordering deflection and elevation that, while the layers continue steadily to lay at stem, stern, or funnel, at his

<sup>1</sup> In the plate appended plain shading has been substituted for red.—Ed.



will, he has a good chance, when once his guns are ranged, of pouring all his fire into that section. This was formerly impossible.

*Predicted Firing.*—Predicted firing is slow and uncertain. Steamers towing targets at no great pace sometimes make several long runs without a shot being fired when *real* accuracy is sought. It is an advantage, of course, to have the power of prediction, especially for long-range, high-angle fire, and in the very rare instances in which smoke interferes with correct laying for line from the gun and does not interfere with the position-finder; in fact, in cases where the guns cannot see their target and the position-finder can; but, as our science advances, smokeless powder will be more and more used, and the necessity for placing position-finders far away from the guns they aid will be removed.

*Coast Defence requirements.*—These illustrations are perhaps sufficient to show the advance made in, and the existing state of, fire discipline and in practical methods of rapidly bringing semi-trained troops into the fighting line of coast artillery; what is urgently wanted, both in organization and stores, to enable coast fortress defence to approach nearer perfection, remains to be pointed out.

*Unification.*—1. In organization; the various branches of defence need placing under one head in each fortress, not merely on paper, but for constant practice during peace. Without such practice it is impossible that they can work together on the outbreak of war, and the defence will be divided against itself. Unification is imperative. Its absence has already led coast artillery to almost ignore mine defence, guard-boat defence, and moving torpedo defence, though none of these can exist without gun protection.

*Knowledge of what is being done elsewhere.*—Next it would be most advantageous to each separate fortress if it knew what was being done to advance the common cause in other fortresses and on the experimental ground. Coast artillery has lost much by the abolition of the Inspector-General of Artillery, whose inspections, when he understood that branch, conveyed useful hints, kept them up to the mark, and prevented useless deviations from the path of true advance. Experience then points to the advantage of the appointment of an Inspector-General of Coast Defence, whose general experience of many fortresses should be of the greatest value to each commandant. Such an appointment would tend to apportion the comparative value of each branch of defence, and lead to the money of the nation being sensibly spent.

*Requirements of Coast Artillery.*—As regards coast artillery practice taken by itself, the following appear to be the present chief wants:—

*Good and fast Steamers.*—Men and stores must be transported rapidly to and from the forts, and targets need towing at a pace somewhat corresponding to that of modern ships. Such steamers are still needed everywhere. It is highly probable that if coast artillery are enabled to practise at really fast moving targets, very much will be learnt, disputed points will be cleared up, theories will disappear, and many fallacies will be exposed.

*Good Communication.*—The term "communications" has been fre-

quently used. It covers a multitude. The perils of peace artillery practice show clearly enough that every section C.R.A. in coast defence should be able to receive and send messages by night and day without confusion, both from and to those above him, and his adjoining C.R.A.'s, and to his fort commanders. Unlike field warfare, there is no difficulty in the matter, for fixed stations are operated from. This necessity is most rapidly and surely met by telegraphs, and it has lately been suggested by more than one able coast artillery officer that the best form would be a printing telegraph. There could then be no mistake. Telephones are slow, irritating, uncertain, and inaccurate, especially during firing. It is still more necessary that the fort commander should have rapid and unmistakable means of sending, at any rate, some orders, and getting back intimation of their correct receipt. It is, for instance, of vital importance in peace practice that he should be able to countermand an order to fire. A case occurred where Militia were manning a large fort, some groups of which were casemated, when a fort commander, believing he had his groups in hand, sent an order to fire by "Groups from the right." He had no sooner done so than circumstances led him to countermand the order. Bugles, telephones, &c., announced his determination, but without effect. The casemates had wooden floors and were exceedingly noisy, and nothing could be heard; group after group, once committed to action, continued to fire until hastily despatched messengers reached them.

*Electric Bells.*—A remedy for this would be communication in the form of electric bells over every gun, started by the fort commander, and arranged to continue ringing until switched off by the gun captain, who would at once order "Stand fast," and report to his group officer.

*Order Dials.*—Order dials are sometimes suggested, and have been used, but they are not satisfactory. Passing orders from mouth to mouth is worse. The changes of elevation and direction from the existing elaborate position-finder dials, which entail the use of a large trained staff, are a source of noise, confusion, and error, which tend to keep fort commanders in a state of anxiety. If dials are used they should be extremely simple, easily worked, and close under the eyes of the men who have to comply with the order they convey, nor is there probably much difficulty in meeting these conditions.

*Targets.*—The question of targets for coast artillery is one of far more importance than is generally realized. While mere anchored barrels and targets of that kind were the only articles made available, coast artillery practice never soared above sight-laying and the service of individual guns. Such targets teach no tactics. If they are visible they offer few of the difficulties a layer would experience in firing at ships, and but little practice in picking up a range. As often as not when they are knocked over it is by a shot which is more or less abnormal to the rest of the practice. Shooting at such marks led to slow work and a feeling that luck had more to do with results than brilliant training and good work.

*Small towed Targets as imaginary Ships.*—Shooting at more or less

imaginary targets, as, for instance, towing some small target and building up, in fancy, a ship round it, has been tried (Plate 28, Fig. 4, and Hong Kong). It is very cheap, but is but a shade in advance, and has delayed progress. Nearly everything is guesswork. Somebody in the fort, often not exactly behind the guns, guessed the line, and the range officers guessed the unders and overs, sometimes aided by rude instruments. The results of all these guesses were tabulated, the angle of the falling shot calculated, and the whole referred to diagrams, resulting, without much trouble, in the whole of the shot striking an imaginary battle-ship; yet our practice at record targets, where each shot has really to make its mark, hardly bears out the beautiful accuracy of this class of shooting. The target, a comparatively small point when seen over the sights, is easy to lay on. It is really the point fired at, but for the purpose of these calculations was generally transferred to the centre of the imaginary ship, a method which especially suited the dispersed fire of the position-finding system. Unders and overs, shots ahead and shots astern, alike counted as hits, the positive impossibility of laying at the real centre of a ship being ignored.

*Record Targets.*—The diagrams in Plate 28 show the comparative size of most of the targets which have been used for towing, except one large, clumsy, and expensive structure, which was used at Plymouth long ago, and which was the first attempt at a large target. All the large "record" targets (so termed because each hit leaves its record on them) are, somewhat unfortunately for me, after my designs. Thoroughly convinced of the gain which would accrue to coast artillery from firing at rapidly moving large record targets, I have spent time and money in successive attempts to produce one. It has been uphill and thankless work. Here is a model of the latest which has been made. It seems to offer less resistance to towing, and has answered well in several trials to which it has been subjected. It costs about 13*l.* when of the size of 36 ft. by 12 ft., and is very simple to repair. The original has received an immense amount of punishment and is still as serviceable as ever.

All these "record" targets merely tow behind a steamer, which, for considerations of safety, can only move more or less *across* the front of a battery. None have as yet attained a high towing speed, though this one promises it. No steamer has been available for towing it fast.

Targets are much wanted which will advance and recede rapidly from the batteries. It is quite easy to produce targets, actuated by the wind, which will do this, but if made of anything solid and left to move free they are said to be dangerous to navigation, and would be objected to. I endeavoured to produce a target made of large india-rubber balls, but the price was prohibitive and the wind acted singularly little on them. With a wind registered at 20 miles per hour blowing off shore, a thin india-rubber bladder (such as children play with), about 10 in. in diameter, though it seemed to displace an exceedingly small amount of water, travelled for 1,200 yds. at the insignificant rate of 2 miles per hour, its progress being recorded

by taking its range every half minute with a depression range-finder. Only a very limited trial has, however, been yet made of these, and probably this is the direction which is most promising.

Nothing short of a battleship is a perfect target for heavy coast guns, but these cost half a million, and it is doubtful if they will make themselves targets, even in war time, if coast artillery are really well prepared. *In the hope, however, that the publicity this Institution gives to lectures will induce someone to come forward and release me of a self-imposed but costly task, the conditions which large targets should fulfil are appended.*

#### *Towing Targets.*

- (a.) A towing target must not present a less area than the probable vertical rectangle of guns fired in groups under service conditions with a practical maximum of correct service, but the larger the better if it fulfils other conditions.
- (b.) Must offer little resistance to towing when moving at a good pace, say, from 7 to 12 knots per hour with a tow-rope of not less than 300 yards.
- (c.) Must be inexpensive, as it may be destroyed by exceptionally accurate fire.
- (d.) Must be capable of easy, rapid, and inexpensive repair.
- (e.) Must be capable of being towed in reasonably rough and stormy weather.
- (f.) Should be a "record" target, *i.e.*, should register all hits.
- (g.) Must show a water-line of somewhat the same nature as that given by a ship.
- (h.) Should admit of something being carried away by each shot, so that a range party in the towing vessel may know when it is struck.
- (i.) Should have some beam, so as to equalize to some extent the conditions of fire from high- and low-site batteries.

#### *Other Moving Targets.*

A target which is capable of moving either towards, from, or across the line of fire is a desideratum. There is, however, little objection to one target for moving in and out, and another for towing across. Unless easily dirigible, these must not be solid or dangerous to navigation.

A smaller target, representing a torpedo-boat, capable of very rapid movement, is also much needed. It should be capable of being worked both by day and by night.

At many of our large fortresses the form of attack coast gunners have the greatest difficulty in meeting is the modern equivalent of the old cutting-out expeditions, *viz.*, attack, by small squadrons of torpedo-boats, on the shipping covered by their guns. To produce a good defence, practice at very rapidly moving targets, which sit low in the water, is very desirable.

Navies have elected to meet torpedo-boat attack chiefly by quick-firing gun fire, and coast fortresses appear to be following the lead without trial; but the result of all-round fire of this nature on other ships of the same squadron has not, perhaps, been sufficiently considered. In many of our coast fortresses it is, at any rate, probable that free shooting into the opposite forts and shores will be seriously objected to. Opportunities of practice at targets somewhat resembling torpedo-boats in size and speed may lead to the discovery that small quick-firing guns are not the most suitable weapons to meet torpedo raids.

When shooting big game with great vital powers, large bores and

heavy bullets are used. Small game is far more easily disposed of by fairly large bores and small shot, while the danger to outsiders is minimized; and the analogy may hold good in coast artillery practice, but without real practice at good representative targets, everything is wrapped in theory and doubt, and coast artillery cannot solve the question as satisfactorily as they have met the altered conditions with regard to battleships.

*Defence by Night.*—Again, if such a target is made available for coast artillery, they will be in a position to solve another problem, which is at present in a backward state of solution, namely, how gun defence in all its branches is to be made as effective by night as by day. The way in which the water area commanded by the guns is to be lighted at night and in damp weather, with smoke hanging, has not, so far, been placed in the hands of coast artillery to deal with, though it so intimately concerns their efficiency. Even the electric lights they now work by are run by another branch of the defence, in their own fashion, an additional instance of the need for unification. When really rapid targets come into use it is more than probable that, better recognising the difficulties with which they have to contend, artillery will demand better methods of application of the electric light itself for their own purposes, or even abandon it altogether in cases where the configuration of the shore admits of the use of a better light for showing up torpedo-boats, &c.

*Use of High Explosives will have to be considered.*—In the near future, arrangements will have to be made to produce targets for practice with high explosives, but these present little difficulty. There is no reason, as far as the range for peace practice is concerned, that there should be more danger to be apprehended from such projectiles than at existing practice. The shells go into very small bits, and these do not range anything like as far as the ricochets of the projectiles now fired. If the shells do not burst in the gun or at the muzzle, they will not burst until they reach the end of their flight.

*Placing of Guns.*—The practice of coast artillery is enormously influenced in its quality by the way its guns are placed and mounted. Gunners endeavour to make themselves responsible for the efficient gun defence of their fortress, but their difficulties are increased by the forts, batteries, and gun sites being designed and placed by others. Defence would be very much strengthened, probably at a considerably reduced outlay, if the position and style of mounting of guns were largely influenced by coast artillerymen; and the same may be said of the position and construction of range-finding cells and lights. Peace practice often affords an excellent practical test of the wisdom expended in choosing sites. If guns are placed in bad positions, and are ill-mounted for the work they have to do, danger at practice almost always results. Guns that would do more harm to friend than to foe in war-time had better not be mounted. It would be perfectly easy to test sites by target practice before expending large sums in permanent emplacements and batteries; and the real defence of fortresses would be enormously improved, while coast artillery would

not be troubled with the work of forts in the practical value of which they do not believe.

*Caution of Coast Artillery during Practice.*—The very great caution used by coast artillery during target practice is evidenced by the fact that, though some 63,000 rounds are annually fired seawards at targets by Royal Artillery, Militia, and Volunteers (excluding Shoeburyness), up to the date at which the Target Practice Committee commenced sitting only 11 complaints of accidents, or approximation to accidents, had reached the War Office since 1864, a period of 28 years, while in only one of these cases was any injury done to anybody, when artillery, firing from Plymouth Citadel, in 1864, with old smooth-bore guns, struck a boat, after a shell had made several ricochets, and unfortunately killed a man.

*Cases of Chance of Accident not officially recorded.*—But though these are the only officially recorded cases, there have no doubt been instances where projectiles have gone a great deal closer to boats than the officers in charge of practice liked; and still more frequent instances in which, though no danger to vessels or boats ensued, projectiles have not pursued a course intended by the commander of the practice, either from his orders not being correctly conveyed; from mistakes, most frequently caused by too great reliance on the use of instruments; by long and weary delays; by commanders themselves not having experience of the work; or, in the vast majority of instances, by the uncertainty of ricochet.

*Ricochet.*—Coast artillery practice would be generally simple and safe were it not for that scourge of the coast gunner—ricochet, which is responsible for nearly all the mishaps which have from time to time brought the artillery into trouble.

Shell fired from guns *ought*, theoretically, on striking a plane surface to ricochet to the right, unless they strike at such a falling angle as not to ricochet at all; and inexperienced (and even experienced) officers at times have trusted too much to this theory, and judged that the target was safe for practice when they saw that the line of fire and all to the right of it was clear. But the surface of the sea is hardly ever a plane surface, and what are called abnormal ricochets, though they are strictly in accordance with natural laws, occur. Every now and then a shell striking a wave flies to the left. There is no possibility of telling when this may occur, but it happens most frequently in rough weather.

*Suggestions for minimizing Ricochet.*—No witness who appeared before the Committee offered any practical suggestion for minimizing ricochet—the greatest source of danger in target practice; yet the matter is fairly simple, and from its importance, not only to the increased safety of target practice, but as a solution of the difficult question of the defence of land-locked channels by gun fire, in which at present friend and foe are involved in equal destruction, it is very much to be desired that attention should be drawn to it. It will be only one more of the many additions to practical defence which have been brought out by target practice.

*Non-ricochet Heads.*—It is known to many artillerymen that flat-



headed projectiles ricochet but little, and it is probable that a slightly recessed head would ricochet even less, while those of the service shape ricochet more freely, or as freely, as any. Projectiles for fort guns in locked-in situations, and especially those on high sites, would be as effective as at present, and in some cases more so, if they were made with non-ricochet heads, while many forts which cannot now practise their armaments and their personnel could and would be far more ready for war if made available for target practice. It has also been suggested that coast artillery should do as the navy do, and practise with reduced charges. This may be practicable with B.L. guns not on disappearing mountings, and where recoil is a matter of no moment. The naval mountings for the most part differ from land service mountings. In the latter, and especially in muzzle-loading gun mountings, the rapid service of the guns depends largely on a full recoil.

But ricochet is undoubtedly greatly reduced by using reduced charges. The following table just received from Lieut.-Colonel Rainsford-Hannay shows the different angles of descent with full and reduced charges from a 9-in. R.M.L. :—

Range yds.	Angle of descent.	
	Full charge.	Reduced charge, 33 lbs.
2,000	3° 45'	6° 8'
2,200	4 17	7 8
2,500	5 7	8 37
2,700	5 41	9 42
3,000	6 35	11 11

With an angle of descent of 10° there is generally no ricochet from water. It is impossible for any inspecting officer to be sure that forts, guns, and mountings are really in an efficient condition, however close his inspection, without firing with ammunition such as would be used on service; and experience shows that practice, and practice alone, under conditions which resemble what may be expected in war, can ensure perfect preparedness. Perfect readiness and organization are what coast artillery attempt, and the nearer these are attained the more it becomes certain that the fortresses, of whose defences they are the first line, will never be attacked from the sea by ships.

Destructive criticism is easy enough; but whenever remarks have been made adverse to existing systems of practice it has been my endeavour to suggest corresponding remedies. Discussion is the most valuable aid to improvement, and I hope that coast artillery practice will gain much in this way to-day. It is frequently the case that more is learnt from the remarks made after lectures at this Institution than from the lectures themselves, and this occasion will, perchance, prove no exception.

Lieut.-General W. H. GOODENOUGH, C.B., R.A. : Colonel Richardson in two places,

I think, in his lecture, once under the head of "Placing of Guns," has referred to guns being placed without reference to coast artillery officers, at least that would be the deduction drawn, I think, by any impartial reader. The fact is this—the emplacement is made and the works are built by the engineer. The engineer being present on the spot gives to many persons the idea that he has a great deal to do with the conception. But he only works under orders. The order emanates from a Committee, on which artillery and engineer officers are represented. If the officers who serve in the coast artillery have not been adequately represented on that Committee in the past, I think it may have been due to accident, but I rather expect that on inquiry it would be found that what might fairly be called coast artillerymen have had a fair representation on that Committee. Moreover, every such recommendation of the emplacement of guns is sent down to the district to be reported upon. There is too often a tendency to exercise criticism in a perfunctory manner in cases where projects come down for consideration. They come to the General—I have had to criticise them in several capacities in my time—they come to the General, and the General refers them to the artillery. Sometimes they are run through a little too quickly. It behoves artillery officers to recognise their responsibility very keenly in that matter, and I think that with the exercise of patience, perseverance, and preparedness to endure rebuff sometimes, there is no doubt whatever—inasmuch as there can be no opposition to it that I can see—that their views would receive adequate attention on all occasions. Moreover, in the progress of the work, as works are being built, it has been my experience that artillery officers are far too much in the habit of sitting by with their hands in their pockets and not taking any step to endeavour to see that shortcomings or errors which have been made in the work are rectified and brought to notice, and I as General officer have always encouraged artillery officers to watch whilst the works were being built, to take an interest in them, and to co-operate with the engineers; and, if they think anything is going to be wrong, not to wait till the matter is completed, but to point it out during the progress of the work to the General officer, who, you will remember, is the person in whose charge the execution of the work rests, and who has got the right and duty of pointing out to the engineer, and referring, if necessary, to Headquarters, any matter which requires rectification. I thought it worth while to make these remarks as an encouragement to artillery officers to take their part in their own duty. No doubt what Colonel Richardson says may have been done in the past, but it has been owing to the artillery officers not having taken up the cudgels for their own profession in a sufficiently marked manner. I cannot help believing that if they would well inform themselves, and exercise judgment and perseverance, they would always be adequately listened to.

Captain GRENFELL, R.N.: The opinion of the Commandant of the School of Gunnery on the question of position-finding instruments is, I think, a matter of extreme importance, and one which demands the attention not only of this Institution and its members, but of the public as well. We have in England two methods by which guns are fired: one is the control of a number of guns by means of more or less delicate instruments, thus concentrating in the hands of one man the power to discharge a number of guns; the other is allowing the man in command of the gun to do his own firing independently. In the navy we are rapidly giving up supervising and controlling the fire from a position remote from the guns, but, as I understand Colonel Richardson to say, the whole of our costly system of coast defence as regards artillery is more or less based, at the present time, upon the system of controlling the fire of guns from a distance, so that the man who is actually in rear of the gun is not the man who actually fires it. Now I know perfectly well how difficult it is for any officer holding Colonel Richardson's position to state his own views on a matter of this sort, however important the expression of his opinions may be from a public point of view; but the remarks of Colonel Richardson, to which I invite your attention, must mean that the system upon which our coast defence, in respect of artillery fire, is organized at the present moment is one which has not got his approval, and that is, I think, a matter for most serious consideration.

Colonel G. A. FRENCH, R.A.: There is one point I should like to make a remark upon, namely, the term "fire commander." That is a term which has lately been brought into the service, and, as far as I can make out, is not palatable to the art-

lery. We have had "fire workers" and "fire masters," but "fire commander" is something new. I think the Militia and Volunteers, who will mainly man our forts, will not clearly understand what "fire commander" means. "Fort commander" they would clearly understand, and I believe our "fort commander" ought to be what the name implies; he should command a fort and everything connected with it, not only the big guns, but the small guns also; and he should have the electric light under his orders. Seeing that we have so many officers present capable of giving an opinion, I should like to get the general opinion on that point, because, as far as I can make out, it is decidedly in favour of reverting to the term "fort commander," which carries a meaning, I think, that everybody can understand. A previous speaker has referred to the question of position-finding as a most important matter. It is a very awkward thing for officers in certain positions to offer opinions publicly on such a point, but, having some 20 years' experience in the Colonies, I must confess as my opinion that if the guns in many of them were tried to be worked on the proposed position-finding system there would be very great difficulty in carrying it out with the partially-trained troops available. I do not like to offer any criticism myself, but I shall be very pleased if some of the experienced officers present will let us have their opinions upon that point, for it is a matter of most vital importance to us.

Major A. M. MURRAY, R.A.: My natural impulse, after hearing this lecture, would be to be quite silent, to take it away, read it, and re-read it, study it profoundly, and try and induce those with whom I am now serving also to study and profit by its lessons. But there are one or two points, if you will allow me, which I should like to refer to before the discussion closes. Colonel Richardson said coast defence was not much practised. Is not, perhaps, the reason why it is not practised because many soldiers, and certainly most sailors, do not believe that the attack of our fortresses will ever become a practical reality? I have heard naval officers rising from these benches time after time to tell us that they will not even consider the question of an attack on our sea front, as they believe such attack to be impossible so long as we retain command of the sea. They say the command of the sea is not a question of "if," but a question of "must." We must retain command of the sea. I was trying to interest a naval officer only the other day about some proposed joint coast defence operations; but he said the navy had not time for such operations, and, for his own part, he did not look on invasion as a practical question at all; as he very truly pointed out, if we lose command of the sea, even supposing we constructed position-finding cells and C.R.A.'s stations all round England, we should be compelled to sue for peace, as, if the seas were closed to us, we should be starved out. I mention this matter to show how very hard it is to get any real enthusiasm for coast defence practice among the younger officers. General Goodenough alluded to the want of interest among officers in coast defence matters; but I really think that this feeling of unreality is at the bottom of this want of interest. Young officers coming from the Royal Military Academy, fresh from their studies of military history, feel that if the country ever goes to war, its fate will be decided in the future as in the past, not in casemates in England, but abroad, in the open field. There is one other point, if I may be allowed to allude to it, and that is the question of training for coast artillery practice. Colonel Richardson has placed before us a very high standard indeed of efficiency, and it should be our endeavour to act up to that high standard to the best of our powers; but it really is a subject for consideration whether in garrison artillery we are quite sure that our system of training is the best possible system for reaching that high standard. It will be generally admitted, I think, that the horse and field artillery batteries have, during the last five years, reached a state of perfection in respect of fire discipline, and shooting, which will compare most favourably with the corresponding state of perfection reached by French and German batteries. The point I am trying to make is, how this excellence was achieved. It was certainly not owing to specialists—I mean special instructors outside the battery. There are no specialists in the horse and field artillery; there are no instructors in range finding, no instructors in Scott's sights, no gunnery instructors. The battery officers do the entire work of instruction themselves. They train their men during the winter and spring months, and then take the men whom they have trained to the practice ground and the

manceuvres in the autumn to test the result of their work practically. Could not there be the same system in the garrison artillery? I found the other day when I was visiting one of our great maritime fortresses (Plymouth) that there were as many instructors as there were combatant officers. The instruction, practically, is taken out of the hands of the battery officers in garrison artillery. I think I am on safe ground in saying that command and instruction should go hand in hand together, and I would go so far as to lay this down as a fundamental and undisputed principle of modern military organization. Surely, if that principle is applicable to the field and horse artillery batteries, to the infantry, and to the cavalry, it is equally applicable to the garrison artillery.

Major STONE, R.A.: I should like to offer a few remarks with reference to what Colonel Richardson said regarding officers of artillery very frequently not having been consulted. I do not know whether I understood his remarks in a right sense, but what I understood was that officers in high positions, colonels on the Staff, and so on, are not consulted when any new works or guns are to be mounted in the district in which they command the artillery; not only are they not consulted, but if they ask to have any information as to why certain works have been decided upon, or why certain increases, or strengthening, or alteration, or decrease in armament have been decided upon, they are met with the reply that the R.A. and R.E. Works Committee Report, which explains the reasons upon which the proposals have been based, is confidential and for War Office use only. If, in my humble position, I may make a suggestion, it is this: that whenever the R.A. and R.E. Works Committee decide upon any change in the works or armament in a district, the C.R.E. and the C.R.A. in the district should *ex officio* be temporary members of that Committee in order that they may give the advantage of their local experience and knowledge to the other members of the Committee. It is a question felt very deeply amongst officers commanding R.A. districts, and I think the way to make officers of garrison artillery take an interest in their work is to give them that measure of responsibility which will enable them to see at once that their suggestions are well thought out and carefully considered, and are, in some cases, acted upon, but at all events are treated with respect.

Captain WILLIAMS WYNN, R.A.: I wish to ask Colonel Richardson a question on the following passage in his lecture: "When shooting big game with great vital powers, large bores and heavy bullets are used. Small game is far more easily disposed of by fairly large bores and small shot." Taken in conjunction with some remarks in a former lecture of Colonel Richardson's (published in the Proceedings of the R.A. Institution, January, 1893), I understand that to mean the employment of case shot in heavy guns. I should like to know how we are to arrange to follow up torpedo-boats quick enough with these heavy guns. If you were to take a blunderbuss to shoot the small game, it would be fairly effective at ten yards, but there would be considerable difficulty in working hand and eye together sufficiently quick and with sufficient accuracy to bring down the flying or running object. I have had a short experience of heavy guns at Malta. I find the training is very slow, and if you were following torpedo-boats it would be almost impossible, unless you waited for them at a particular given point, to do much good with that nature of ordnance. Another point I wish to remark upon is the "battery officer" recently introduced into the organization. I have been a battery officer myself, and the duties certainly appear to be ill-defined. I read carefully what was laid down in the regulations as to the duties of the "battery officer." No doubt on service there would be certain important duties, such as the replacement of casualties from Reserves. But in peace practice there appears to be very little to do. I found I was authorized to stop the practice if I saw that any gun or group was out of hand or firing in such a way as to cause any danger. I stopped one gun which I thought was out of hand, but I did not get much thanks for it. So that I think the duties of a battery officer could be as well managed by the group officer.

Colonel RICHARDSON: With reference to General Goodenough's remarks, I wish I could agree with him as to the ease with which local people can get a word in about defence matters. It has not been my experience. He also remarked that artillery officers do not take up the cudgels. I do not think that has ever been a weakness of mine. I have fought hard to get a word in and very

often unsuccessfully. With reference to Captain Grenfell's remarks, I think that he refers to fire controlled from a conning tower. Our practice is something that way, but the conning tower in our case can either loose off the guns electrically, or can leave them to fight for themselves, merely giving them the exact range which cannot, so far, be given on board ship. I am not at all opposed to a great deal of the system of fire control now in vogue; I should be very silly if I were, for I have had a good deal to do with building it up; but I do not like placing the control further away. I hold that the closer we can keep the commanding officer to his men the better will be their fighting. I reason that when men know the commanding officer is in a position to see and recommend them for reward they will fight better. If they think he is in a safe place far away, I do not think good discipline will result. That is my idea. Fire is controlled from these distant stations, but the gun is laid for line by the men. That is the concession lately made. The idea was formerly that the whole thing should be done by an instrument. By the use of these very accurate range-finders you know exactly the distance from the gun to the object; being given this distance, let coast artillery hit the object in their own way instead of firing by electricity from the instrument at a distance. I quite agree with Colonel French's remark as to the term "fire commander." I do not think the title hit home. Coast artillery were very content with "fort commander," and had got almost to understand what a "fort commander" meant, when suddenly he was changed to a "fire commander," and few know where or what he is. The system *may* prove a very good one, but it has not had a preliminary trial, and there was no demand for it. It ought to have been well tried before introduction, and under difficult circumstances, to insure officers against being pulled up in case of accident. Major Murray thinks attack on our sea borders will not be a reality. I agree with him there, provided the coast artillery are kept perfectly efficient; but if the defence is weak I think we may be attacked. He compares the coast artillery with the horse and field artillery, and says the horse and field artillery are very efficient. I think they are; I should be the last to say that they are not very efficient. The two branches, however, are very different in many ways, because field artillery do not deal with Militia and Volunteers, and garrison training is largely affected by local conditions. Local conditions have an immense influence on the training of coast artillery; that is to say, a company may go to one fort and its training may be, and cannot help being, different from what it is at another fort. The object of the present organization is to enable companies to move from one place to another; leaving specialists to do all the local work. I should like very much to see all companies trained by their own officers up to the point at which they could march into any fort and, with the assistance of local specialists, carry on fire at once accurately, and in fact come up to the ideal organization of the manual. Captain Wynn wanted to know how I meant to get a large bore and yet get off a lot of shot? Case shot, certainly, I advocate. They are most extraordinarily effective at very short ranges. Any very narrow channel can be defended most admirably with Q.F. guns of large bores, firing case shot, or short fuzed shrapnel.

Captain GRENFELL: Rifled guns?

Colonel RICHARDSON: Smooth-bores; the rifled guns would not shoot case quite so well; the smooth-bore does it much better. There is no reason why in one of these smooth-bores you should not put a comparatively large charge of powder and drive the shot as far as you really want.

Captain WYNN: The present 32-pr.?

Colonel RICHARDSON: The present 32-pr. does very well at a very short range, making an extraordinary pattern, something quite wonderful, I think; but it is a clumsy, makeshift gun. There are other forms in which you might have a large bore. You might go on puffing projectiles out of an air gun with a large bore, and shrapnel with a short fuse is very effective. I do not think any one gun would do everything, but I think a combination of several guns would make it rather hot for torpedo-boats. I doubt myself if small-bore Q.F. guns will hit them with sufficient certainty. If you once get a really quick moving target and try to hit it with a Q.F. gun you will be disappointed, particularly at night. The very flash of one gun at night prevents the layer of the next gun firing accurately.

The flash on a dilated pupil has an effect very like shutting the eye of the layer, and that prevents accuracy; therefore I think a large bore spreading its charge over a great area is not a bad way of hitting a little thing. *Heavy* guns are not wanted, because you can have a large bore but yet quite a light gun, one that could traverse quickly and load very quickly. As regards the "battery officer," I have already said that I think him tolerably unnecessary. I think the term "battery officer" was brought in from a desire to keep in the garrison artillery the old name "battery." We, in the artillery, are very much attached to old associations, and somehow or other the garrison artillery did not seem to like losing the term "battery"; that is how "battery officer" must have come in; it is a sort of attempt made to keep the old term going, instead of calling him "battery commander." But they have taken away from his duties at the same time and have left him nothing to do.

The CHAIRMAN: I think that this paper which Colonel Richardson has been good enough to read to us is one that we cannot readily enter upon. There is a great deal in it that requires thought and careful study before we can pronounce an opinion upon every point which he has raised. Another thing is that coast defence at the present moment is in a state of transition and development. It is very costly to carry out changes, and therefore it requires us to be very careful in considering our ideas before carrying them out. There is a great deal, especially in the conclusions that Colonel Richardson has come to, with which I generally very heartily agree, and I am sure, speaking for myself personally, I shall find the lecture of the greatest use. There was one question mooted which perhaps I can put right, and that is the course of reference in the event of new works or new armaments being adopted. I have had some little experience of the way in which these matters are conducted. The original conception is thought out by artillery and engineer officers combined, and, so far as my knowledge goes, their proposals are invariably referred to the General officer of the district before they are carried out, and he presumably refers them to the commanding officer of artillery and the commanding officer of engineers. If that has not happened in every district, it must have been through some oversight or some accident: but I am sure it was an exception to the general rule. I think Major Murray said that he did not understand why the field and horse artillery got along without specialist instructors, and the garrison artillery company officers did not do their own instruction. Speaking for my own district, I can assure him such is not the case; the whole instruction is done by the company officers, and, although there is an instructor of gunnery, his duty is to look after the special classes, and not in any way to interfere with the instruction of the company by the officers. The officers go to practice with their men, and, when they are carrying out their practice, no outside officer of any description is allowed to interfere between the major and his command. As regards position-finders, I think we must all admit that the wonderful start which has been given to coast defence within the last ten years, to which Colonel Richardson has alluded, is due in great measure to the wonderful success of Colonel Watkin in bringing out his instruments for measuring distances. I look upon it myself, that what during the early part of my service we all desired, namely, to hit a ship when we saw it, is now brought within the realms of possibility. I quite agree that a danger we have to guard against, in making use of new and improved instruments, is not bearing in mind the requirements of discipline and the usage of the service; therefore we ought to make these instruments our servants rather than to become the servants of the instruments. I quite think that in open works we should get along very well indeed with the range-finder, and that the position-finder, although a very valuable addition, is not at all a necessity. But I fail to perceive how anybody could ever expect to hit a passing ship without a position-finder when firing a big modern gun from one of our old-fashioned casemated forts, or when firing high-angled guns from a battery whence you could not see the water. If it were not for the position-finder, attempts to fire these guns with any accuracy or any effect would be simply impossible. Those are the only points upon which I think I can throw any light, and so the only thing that remains for me is, in the name of all present, to thank Colonel Richardson for his kindness in reading this paper to-day.



Friday, June 30, 1893.

MAJOR-GENERAL SIR FRANCIS W. GRENFELL, G.C.M.G., K.C.B.,  
D.A.G. for Militia, Yeomanry, and Volunteers, in the Chair.

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### TACTICAL DEDUCTIONS FROM THE RECENT SKELETON EXERCISES NEAR READING.

By Lieut.-Colonel W. W. M. SMITH, h.p., R.A.; Major E. SATTER-  
THWAITE, 2nd V.B. R.W. Kent Regt.; and Colonel C. H. COLES,  
1st Lond. Vol. Art.

It is customary to say that no training for a soldier can approach in value to that acquired in the school of actual war. This statement, with all its truth, is apt to mislead. There are, in point of fact, certain inherent defects in the teaching of the battlefield. Ask the historian who attempts to compile a faithful account of any great battle from the narratives of eye-witnesses. He invariably finds his chief difficulty in the painfully narrow limitation of the field of view, and the resultant inaccuracy of the chief actors in the struggle. Certain lessons are undoubtedly engraved, as with the pen of steel, on the tablets of their memories; but there are others of equal value which, owing to the frailty of the human faculties, either escape notice altogether, or become blurred or distorted by the ripples of intense mental and moral excitement which stir the medium through which the judgment is reached. The conditions are, in fact, unfavourable to mature discrimination or sound thought, although the opportunities afforded for illustrating principles already mastered by previous study are unrivalled.

How best, therefore, amid conditions of a prolonged peace, to supply a preparatory training, similar in type and adequate to the needs of war, has become one of the urgent questions of the day. A school such as we find at Aldershot or in our Indian manœuvre camps is perhaps the best substitute for actual campaigning that present conditions can afford. The military colleges, the lecture room, the war game, however indispensable as an academic preparation, can never become any real equivalent for actual manœuvres with troops. It is probable, however, that the latter form a better school for the expedients of open-air life, for the administration of war, for the application of drill, and for the handling and control of men, than they are for tactics proper. It is, *à priori*, possible that tactics, in its wider sense, may be better studied in "skeleton" manœuvres, when the care and discipline of men does not absorb the lion's share of the attention; when no panic is occasioned by the too

often hasty critiques of umpires, who are themselves fallible; when ample time for mature consideration and for estimates of labour is available; when field defences may be designed *pari passu* with the imaginary distribution of units; and, above all, when the practice may be conducted on ground which, our present War Minister has informed us, must be normally prohibited to troops by the peculiar exigencies of our rural life. That the whole of the cultivated areas is, however, perfectly accessible to small parties of officers and students, without expense or detriment to property on the one hand or to the goodwill of owners and occupiers on the other, I have proved over and over again by irrefragable experience. I submit, therefore, that the promoters of manœuvres in skeleton have made out a *prima facie* case for a wide development of their use.

Among the numerous topics which the Reading exercise has recalled to my attention with quickened interest and point, I have been forced, by the exigencies of time and space, to select a few distinguished by certain novelties of feature or by their relative importance, and even these can only be dealt with in a manner all too hasty for their intrinsic merit. The main thesis, however, which has been borne in upon my convictions by this and other studies of the past few years, appears to me one of such unique and far-reaching significance as to justify a somewhat more detailed notice.

To those at all conversant with the masterly expositions of the higher science of attack which characterized the offensive battles of Marlborough and Napoleon, nothing in the more recent European campaigns is more surprising than the conspicuous absence of any kindred application of those ruling principles. It is hardly too much to say that, under the stress placed on the military machinery by the novel conditions of conflict, what may be termed the "higher tactical art" has been forgotten or laid aside, while the skilful combinations of those great commanders have given place to the chance arbitrament of hasty venture or ill-regulated impulse. Von Moltke's consummate strategy, his dazzling success, his imperturbable coolness, have somewhat blinded us to the fact that his strokes were too swift and well-aimed, his scale of action too vast, the conditions too novel, and his drill machinery too ill-adapted to warrant an expectation, even under his guidance, of any studied illustration of the higher tactics of his great predecessors. In the Russo-Turkish campaigns it is possible that Skobelev or Baker Pasha might, if in supreme command, have given us some new examples of the grand old principle. As things stood, however, we enquire for them in vain.

What I desire to take the present opportunity of urging is that a science of attack demonstrably exists, and that while its laws are as immutable as those of ethics or geometry, its expression and method will vary as widely as do the drill, the weapons, and other warlike appliances of the epochs in which it is sought to apply it. Just as the openings of the 18th and 19th centuries were signalized by the masterly innovations of Marlborough and Napoleon respectively, so there is much reason to surmise will the first great commander of the 20th century find means to emphasize the fact that the higher principles





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Lines of advance... → —

Lines of fire..... ——— ———

Woods & copses.....

Chas. H. Allen.  
Treasurer, City of London N.H. Oct 7.  
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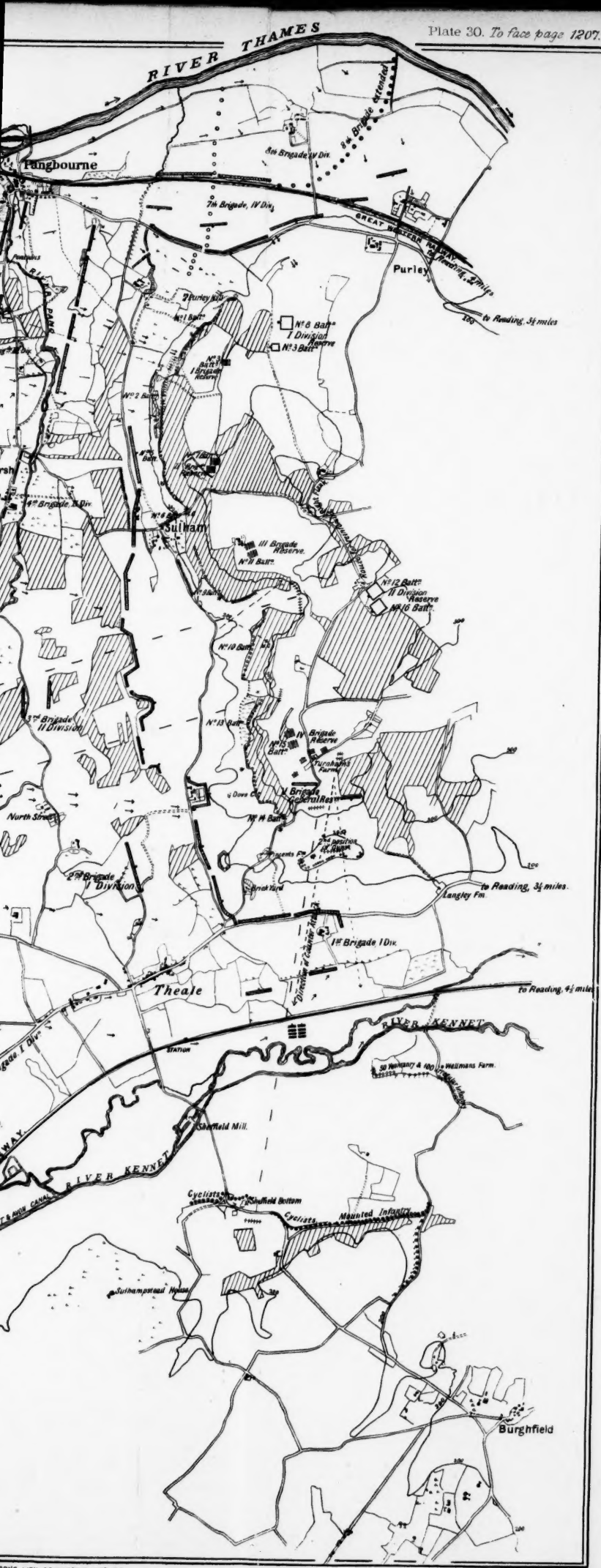
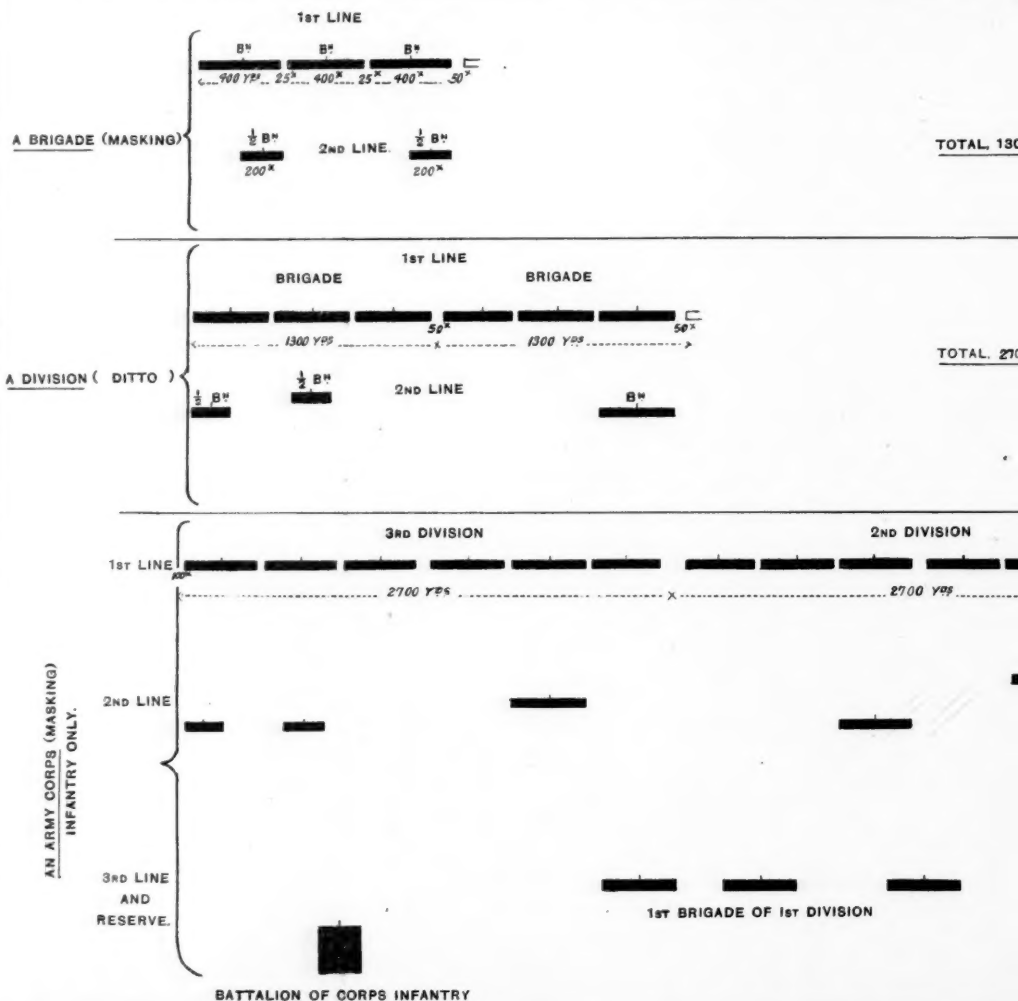


FIG. 1.

ILLUSTRATING ATTACK FORMATIONS OF THE LARGER UNITS  
TO FRONTAGES THAT ARE "MASKED" ONLY.

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— II ——— WHEN EMPLOYED ON A MASKING FRONTAGE. ALLOW 400 YARDS, EXCLUSIVE OF INTERVALS ON R



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TOTAL, 1300 YARDS.

TOTAL, 2700 YARDS.

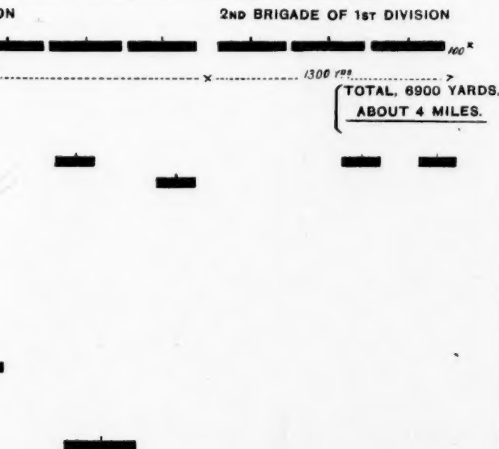
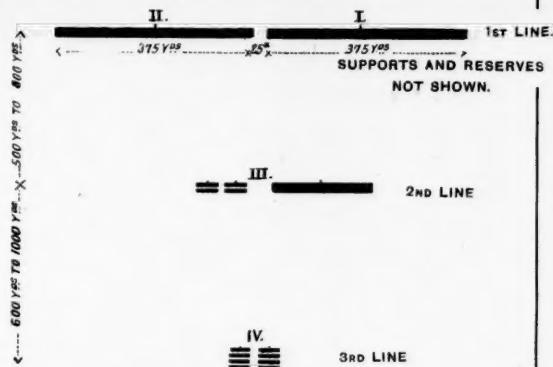


FIG 2.

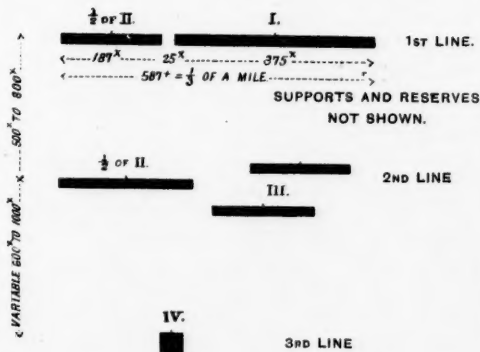
BRIGADE OF 1ST DIVISION DISPOSED FOR FEINT ATTACK,  
OR FOR DITTO CONVERTIBLE INTO REAL ATTACK.



N.B.—THE BRIGADES OF A DIVISION ALWAYS WORK SIDE BY SIDE.

FIG. 3.

BRIGADE OF 3RD OR 4TH DIVISION DISPOSED  
FOR DECISIVE ASSAULT.



N.B.—THE ARMY CORPS RESERVE (3 BATTALIONS) FORMS A 4TH.  
AND 5TH. LINE WHERE DESIRABLE.



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of tactical science do not change with their environment, and can be equally well expressed in the formations of the present day, as in those that formed the working machinery of Julius Cæsar or Frederick the Great. There are many evidences that the Drill Book of 1888, which was compiled under the immediate supervision of Lord Wolseley, took abundant recognition of this tendency. In dealing with negations one has always to speak subject to correction; but I personally am aware of no recent battle, whether in real or mimic war, that has witnessed any due application of the Napoleonic system of attack to our modern formations.

The plate compiled by Colonel Coles to illustrate the imaginary battle of Pangbourne (Plate 30) is a humble attempt to give graphical expression to the Napoleonic principle in the cipher of the present day. The Blue Army, on the 26th February, was confronted under very ordinary conditions with a definite problem of attack. It faced a strong position beset with obstacles, adequately manned, and with flanks extremely difficult of access. The attacking positions gave scope for a very superior artillery fire, but the rivers on either hand forbade the usual faculty for its convergence. What then, in its more general features, was the system, culled from the school of Napoleon, which its commander was called on to apply? Its principle was, first, by means of feints or by actual attacks, sufficiently in earnest to brook no denial, to divert the defender's attention to certain false objectives; subsequently to launch the real "assault" at some other vital fastness, which has been more or less denuded of its local reserves by the necessity of reinforcing the spots first menaced. It also follows, with a view to protect the flanks of the several attacks, and to deny the ground to a counterstroke in force, that the whole front should be adequately masked or contained.

The analogy with the kindred but wider province of strategy is self-evident. Concentration at the right time and place is the golden rule for both; in both the principle postulates a proportionate attenuation elsewhere; the application only is just now more difficult in the domain of tactics, because fallen into temporary disuse.

It would appear, therefore, that three distinct adaptations of our existing infantry formations are in demand to give expression to the requirements of the Napoleonic method of attack—the "masking," the "attack," and the "assaulting" dispositions. In the council of war held on the evening of the 26th, it was necessary to lay down something specific for the guidance of officers commanding brigades and divisions, and the accompanying plans (Plate 31, Figs. 1, 2, and 3) are those which I designed for the purpose. While fully inviting a searching criticism on the dispositions suggested, I would wish it to be understood that I do not advocate any rigid adoption of normal formations to meet every case. I only claim for the arrangements shown that they were suited to the particular requirements of the Pang Valley, and that they are not without some relevance as types of scientific attack formations elsewhere. The plan of attack will be found clearly expressed in the orders of the day (Appendix I), and requires no explanation.

here. The points selected for the main and false attacks, and the wider section of ground which has to be merely masked, are definitely named, and troops are separately allotted for each purpose. A progressive concentration is observable from the 2nd Division, which occupies 2,750 yds. of frontage, to the 3rd and 4th Divisions, which are deployed originally on an alignment of  $\frac{2}{3}$ rd mile each, but under conditions which involve an ever-narrowing front as the advance proceeds. I am prepared for the objection that the extension assigned to the masking formations is hazardously wide. My own fear, looking to the natural strength of the alignment taken up by the 2nd Division, was, I own, that I might have fallen into the opposite error, and that an unnecessary strength was accumulated on the ground allotted to it. The chief difficulty is that experienced in designing the "assault" formation suited to the 3rd and 4th Divisions (Fig. 3). That here adopted is based on the perhaps purposely ambiguous language of the Drill Book, which assigns  $\frac{1}{3}$ rd mile as the maximum front of a brigade intended for actual penetration. It is probably better to avoid crowding or undue contraction of front in the initial stage, by at once deploying one and a half battalions on their natural front. This arrangement gives an extra half battalion for the 2nd or for some intermediate line, and is rendered additionally suitable here, because, as is often the case, the assaulting divisions are intended to converge on the extreme flank, so that the front must automatically contract, independently of losses, as the angle is approached. The Army Corps Reserve (in this case three battalions) can, if the necessity arises, furnish a 5th line opposite the immediate objective of assault. The way in which five successive lines can be severally thrown into the fight is a problem lying somewhat beyond the present field of discussion; but it is obvious that its solution, difficult as a question of mere rehearsal, would be rendered fatally more easy under the appalling conditions which mark the near approach of two hostile infantries at the focus of the main struggle.

It is clear also that a leading part in maintaining the deception of the enemy as to the points of decisive assault must be assigned to the artillery of the 1st and 2nd Divisions, and it would be well to lend the latter reinforcements from the corps batteries during the earlier hours of the battle. The situation of the Kennet is of some interest in this connection. Its relation to the southern flank is apt to give a delusive security to the defender. The employment of a detached battery, furnished with a suitable escort, to rake the enemy's lines from the meadows on the left bank would be well worth any attendant risk, and will doubtless prove all the more suggestive to the present audience from the fact that movements of the kind are apt to be too hastily condemned at the average field day to which we are accustomed.

And here I may perhaps venture to suggest that the imaginary battle of Pangbourne is so fairly typical of English climate and landscape as to form, if for that reason alone, a study replete with interest. The better method for the hypothetical student would be to take the 1-in. or 6-in. maps of the country as they stand, to design

his own plans of attack and defence on the most scientific lines that he can, then to compare his views with those set forth in the "Probable Time Table" and "Published Orders" as he will find them in the Appendix, and to criticise each freely in the light of the other. For instance, he may consider that an attack on some central point, or on the southern flank, gives greater promise of success; he may view the artillery disposition as faulty; he may underrate the resisting power of Pangbourne village, and hence deem the concentration opposite this flank unnecessarily large, &c. On the last point, indeed, I must admit to having harboured misgivings of my own. The probable justification will, however, be found in the great natural strength of the Pangbourne advanced post; in the fact that it hermetically seals two or three of the best avenues of advance; in the ignorance of the strength of its garrison, under which any attacking General must have suffered; and also in the paramount necessity of crushing or masking the latter, no matter how large it might prove to be, and yet lending a hand to the 3rd Division.

It may here be stated that the specially selected officers who were placed in command of the 1st and 2nd Divisions returned convinced from their reconnaissances that they could each with the forces at disposal, slender beyond precedent though they were, have amply fulfilled the tasks (of feint-attack and masking) which had been respectively assigned to them. In this of course they were materially favoured by the features of the ground, and this factor must not be forgotten when we are asked to realize (as so many of our teachers would have us do) the "inestimable advantages of a defensive attitude when fighting amid the enclosures of English scenery" (!). As a matter of fact these advantages are immensely overestimated. Even when ample time for turning them to the best possible account with the aid of fortification has been forthcoming, they can hardly in the nature of things do otherwise than enable the assailant, in his turn, to hold fast with the slenderest forces to his own defensive line along such sections as he elects to mask, and thus add weight to the decisive stroke elsewhere.

I have already stated my inability to deal effectively with more than a certain selection out of the numerous features of interest disclosed by our little imaginary campaign of last winter. It is, however, in itself significant that such a difficulty should arise within the scope of four imperfect days' study in the field. What does it indicate as to the relation of the latter to the elaborate fabric of theoretical teaching as we find it in our military schools? Indispensable though the theoretical method undoubtedly is as a preparation or complement for more practical training, its relative inferiority has impressed itself indelibly on the mind of every advanced student of war. Study on actual ground, whether of actual or imaginary campaigns, never fails to present an unfailing sequence of new combinations of events and conditions, which cultivate at once the judgment, the imagination, and the application of historical lore or of accepted principles, whilst they afford a new test for theoretical study itself; and, by the stimulus which is incidentally given to the

intellectual powers and interests, furnish a certitude that that study will be resumed at the first spare moment with increased zest and capacity for ulterior profit.<sup>1</sup>

It is proposed to advert to the succeeding topics in the order in which the course of the exercise itself brought them under review.

*1st Day.—The Outpost Line.*

It is interesting to observe that the somewhat empirical rule given in the chapter on Outposts in the Infantry Drill, for the *strength* of the cordon, worked out in this instance with highly satisfactory results. It is well known to be founded on numerous instances collected by tactical writers from actual warfare. Empiricism, when applied to tactical problems, is, in 9 cases out of 10, to be distrusted; and is objectionable as a factor in military training. In this instance, it proves sufficiently reliable to justify its retention. 2,150 men occupied adequately 4 miles 1,400 yards, the flanks resting with more than the usual security on the two rivers.

The inadequacy of any rule assigning a theoretical *depth* in miles or yards, on the other hand, made itself pointedly felt. Three-fourths of the cordon traversed hilly and undulating ground, and only at one point—the Mare Ridges—did the first fighting position approach dangerously near to the reverse slope, which gave a distant view and gun-range of the main position. Over somewhat less, however, than one-fourth of the front the chain was carried across the alluvium of the Kennet, whence in clear weather the main position above Theale could be seen at several miles' distance. Here, then, it became essential to protrude the outpost line some way beyond the dictates of symmetry. It is probably an error at any time to practise outpost duties without precisely defining the site that is intended to be covered; and the omission to do so has led to many a fatal misconception. It was for this very reason that much stress was laid on the urgency of officers engaged in this duty keeping their tactical relations to the main position persistently in view. They were not, that is, to ask themselves, "Am I 2, 3, or 4 miles ahead of the latter?" but "Am I so far ahead as to provide ample security

<sup>1</sup> It will be observed that the original circular of instructions invited to the discussion of four preliminary problems. Of these, Nos. 1, 3, and 4 must, in fairness, be debited among the apparent failures of the exercise, since no reports on the subjects were forthcoming. Two good solutions of Problem 2 were, however, received from Colonel Howland Roberts and Captain A. H. East, showing that the outlining of a cavalry veil is not beyond the capacities of any well-educated regimental officer. It was pointed out, under Colonel Schwabe's suggestion at the first "Council of War," that the conditions of cavalry action would differ widely according as the enemy were met with on the Salisbury Plains, or in the enclosed country further east. It was at this point, among many others, that the urgent necessity for the compilation of a really good military map of the country became obtrusively evident. No officer on the spot, out of the thirty or forty present, could indicate precisely where the border line between the Downs and enclosures lay; and the Ordnance maps were quite useless for the purpose. A cheap edition of the Geological Map would be better than nothing. At present the price is prohibitive.

in this direction to the army against surprise or disturbance of rest?"

The importance of insisting on a due linking of all parts of the cordon, and an exact co-ordination of responsibility, became very apparent. The inevitable tendency of piquet commanders to adopt that alignment which assorted best with their own local purview and with too little reference to the symmetry of the whole line received fresh illustration. This individualism was met, as it alone could be, by a division of the front into two sections separated by an obvious boundary, each supervised by a battalion commander, while a staff officer of the brigade was stationed at the boundary itself. Each section, again, parted into moieties occupied by its two supports, whose commanders in their turn devolved their own responsibility within carefully defined limits on those of their affiliated piquets (2 or 3).

A marked preference for the group or Cossack system of sentries has crept into our Service. This can probably be traced to our wider experience of uncivilized as compared with European warfare. It is, however, possible to carry this tendency too far, the chief danger being that the piquet commander may find himself at the critical moment without men at his disposal, or else making unnecessary demands on the personnel of the whole force detailed for the outposts. This day's exercise furnished instances of both the use and abuse of the group system.

The day's orders assigned two guns and one machine-gun to the outpost commander. It is probable that, although both weapons might have proved of use for the legitimate purpose of delaying the enemy without too serious risk to themselves, it would have been sounder, looking to the nature of the country and the importance of husbanding so invaluable a source of strength, to have omitted this detail; thus again illustrating the relative weakness of the artillery arm in country of the normal English type.

The enemy was on this day represented by Major Balfour, who was instructed to penetrate the cordon with a force of light troops, estimated as adequate to the needs of a reconnaissance in force. This able officer gave a good object lesson in the right appreciation of objectives for his purpose. The Mare Ridges, as already stated, brings the first line of outpost defence within 500 or 600 yards of a good artillery position in Englefield Park, a danger existing at no other point in equivalent degree. The woods, park palings, &c., on the ridges doubtless presented their own difficulties; but these, after all, affected rather the question of the time than that of the prospect of permanent resistance to his penetration. It may also be noted that the case furnished a good instance of the superior efficacy of cyclists for an operation of the kind. Major Balfour proposed to use them twice over; first, to effect a vigorous feint at other points, and then by a rapid countermarch to join the infantry detailed for the actual assault; and his claim was fully allowed.

*2nd Day.—Defensive Study.*

The 25th February afforded a detailed study of a defensive field of battle, the object being to hermetically seal the direct advance on Reading by occupying a position abutting at either flank on unfordable rivers. Great care was taken to avoid misconception by pointing out the objections, on the grounds of sound strategy, to the adoption of this arena for a decisive battle; and it is hoped that incidentally the discussion on these and kindred points may have done good service, if only by calling attention to Sir E. Hamley's masterly work on the "Operations of War." First, there was the evident superiority of the line of hostile advance on the right bank of the Kennet over that *between* the two rivers. In either event, however, the advantages of a flank position aided by double bridge-heads on the rivers were dwelt upon. Lastly, the difficulties interposed by the rivers themselves to the use of the position as a pivot for offensive action either to north or south were fully noted, officers being employed in a hurried reconnaissance of their valleys for this very object.

The battle of the 27th must, therefore, be looked upon mainly as a tactical study, induced by the peculiar circumstances of the campaign; and it was decided, with the view of accentuating the educational value of the exercise, to design the occupation with the very *minimum of numbers* capable of an obstinate defence. This last condition will explain some of the apparent anomalies in the disposition, which might otherwise be open to misconception. I have myself felt that the reinforcement of the Pangbourne flank by a single battalion would have just made the whole difference in the prospects of successful maintenance of the ground. It will be seen, therefore, that the question of adequate occupation is one which lies probably within very narrow limits (about one battalion, namely), and for this reason a searching or even hypercritical scrutiny into the details of defence would be of real value as a finishing test of its soundness. The total frontage between the rivers measures close on 4 miles ( $3\frac{1}{2}$  miles). The hill crest only was, however, occupied by the troops, measuring  $2\frac{3}{4}$  miles in extent. Here, then, is seen a perhaps rather unique instance of a commander deliberately refusing to rest his flanks on uncrossable obstacles, and electing the rather to invite the enemy to assail those flanks by leaving room for the intrusion of a turning force between them and the rivers. If this indeed were the only point involved, it would suffice to render a visit to the position in question an amply remunerative one. Take, for instance, the southern flank. The object is to entice the enemy into the wide gap between the hills and the Kennet. What are the dispositions adopted? About  $\frac{3}{4}$  mile behind the actual front, the gap is held by a weak detachment (perhaps two companies), just strong enough to stop a raiding party from reaching the rear of the position. The light troops near the angle have orders to resist languidly, and to endeavour to lure the enemy eastwards. Well behind the crest is disposed the general reserve as a counter-attacking force. Especial



attention is called to the utilization of the outlying knoll south of the actual flank for this purpose. Its outer crest is held by posts strong enough to deny access to any but the most strenuous forms of attack, so as to veil the dispositions behind it. Its reverse slope is then turned to account by screening the advance of the 5th Brigade at the fitting moment in counter-attacking formation, the object in view being to drive the assailants into the river.

The Kennet affords, however, a significant exemplification of the dangers of trusting to the propinquity of a narrow obstacle to give sufficient security to the flanks, even when (as here) the interval is upwards of 2,000 yards. An inspection of the ground should promptly suggest to the skilled reconnoitring officer the peril of allowing the enemy to detach one or more batteries with suitable escort to the right bank with the view of raking the main lines of defence. Here (maybe) is one of those instances where the increased ballistic power of artillery would receive convincing illustration. The danger is, however, naturally met by the detachment on our side of an adequate protective force. Such a duty might, without weakening the recognised cadres, be suitably committed to a *guerilla* force, such as would always be forthcoming in any desired proportions in a country like our own.

The northern flank, on the other hand, gives a valuable instance of security effected by a method that I find nowhere described in the tactical treatises with which I am acquainted, but which my experience leads me to regard as specially efficacious;—I mean, by the throwing forward of a force instructed to delay only. The Pangbourne village forms a special study by itself, being almost unique in its character as an advanced post. In the 1-in. or 6-in. maps it seems alike dangerous to occupy or to leave alone, since abrupt hills on its outer or exposed side appear to render it quite untenable. We have here another illustration of the unsatisfactory character of our Ordnance maps for military purposes. As a matter of fact, the village, if stiffly held, is extremely difficult to carry, because the convexity of the hill slopes protects it from bombardment except by guns brought up within close musketry range. The bridge over the Pang in its centre is all but impregnable, if the houses behind it are judiciously occupied, and these are well covered from distant artillery fire by other buildings; the railway, the Pang meadows within 300 yards, and the access to the Thames Valley can all be commanded by rifle fire from its garrison. Its distance in advance of the position lies between 1,800 and 2,400 yds., and the fact is only recorded here as another protest against that hasty empiricism<sup>1</sup> which attempts to assign, for all cases alike, a certain maximum distance, which is not to be exceeded, irrespective of the other data of the problem. The scheme allotted it a garrison of half a battalion, a detachment certainly all too weak for its purpose. A garrison of twice that strength would have been amply justified, if available, in view of the inestimable value of the delay which an obstinate

<sup>1</sup> Ste. Marie-aux-Chênes, often quoted as a case in point, was advanced about the same distance; but its other conditions were widely different.

defence must occasion in the event of this flank being assailed. The Thames meadows behind were in addition occupied by one battalion, thrown forward for delay purposes only.

The position of Theale on the other flank bore a geographical relation to the main line nearly identical with the above, but differing so widely in its other relations to the country round as to demand the precisely opposite treatment, thus forming an instructive contrast to Pangbourne. The flank brigade was called upon to furnish a party, which the French would (I believe) term an "advanced patrol" (30 men probably), for delay purposes only within the village. This object would, probably, be best accomplished by firing cottages in pairs on either side of some essential but narrow part of the road traversing it from front to rear.

The main element of weakness in the position was precisely that which unfortunately the average reconnoitring officer in our Service is, in my experience, the last to detect, viz., the impossibility of attaining any approach to equality in the artillery duel. The superiority in this respect, which is generally deemed inherent to the offensive, was indeed less marked than usual, because the restriction of front due to the two rivers forbade that vastly enhanced convergence of fire towards the flanks, which is the prerogative of the attack. But the woods which so thickly clothed the slopes and crest, and which afforded considerable protection to the defending infantry, simply denied every vantage ground to his guns; and if more than the 48 guns allotted had been forthcoming it would have been by no means easy to use them. The sites selected for the batteries shown in the map are conspicuous and otherwise highly defective, but there are none other available.

In spite of the meagreness of the troops assigned, it was reported to me by all officers engaged that the front was in their opinion adequately occupied. Two divisions provided for the passive defence of both front and flanks, and held back sufficient brigade and divisional Reserves for the delivery of local counter-attacks. An extra brigade, strengthened by details of the other arms, was held in hand with a view of delivering a decisive counterstroke. If the front be reckoned from river to river, and the defensive force be calculated at 19,550, the proportion of men to the yard would barely amount to 2·9. Taking the crest line only as the frontage, the same estimation would give 4·7 men to the yard—a much smaller ratio than is generally recommended. It may perhaps be asked how a large reinforcement—say of 2,000 infantry—could have been utilized. Putting aside, as already suggested, some relief for the Pangbourne flank, and a further strengthening of the 5th Brigade for the decisive stroke, the answer will be—not by any material additions to the frontal defence, but by a large development of delay operations *in front* of the main position. The locality was one which, with its streams, its osier beds, and nut-copses, was well adapted for the purpose. Stress was, however, laid on the grave defect inherent in all delay operations,—the danger, namely, of weakening, morally even more than physically, that impenetrable barrier which, like a steel girdle, ought to be found

stretched tautly from point to point across the field, from which no further withdrawal is recognised, and which every soldier knows from the first is to be held up to and beyond the last cartridge, but never relinquished with life. Two obvious deductions from these premises were, therefore, strongly insisted on; viz., that the most useful delay operations in advance of the alignment are those which aim at preventing the enemy's guns from taking up their first positions until he has, himself, brought a superior rifle fire on to the scene, the troops best suited for the purpose being cyclists or mounted infantry; and, secondly, that all troops, which have been so advanced, should retire eventually by prearranged avenues into 3rd line, or general reserve.

Some interest will naturally attach itself to the one-two-relief redoubt which was traced out on the ground in advance of the left flank by Major H. M. Lawson, R.E. The hostile artillery position in Englefield Park commands its site by 50 or 70 ft., at 3,200 yds. range; but this was generally deemed too small a defect to be appreciably felt. The example is commended, therefore, to those students of purely theoretical war-games who are disposed to attach a perhaps exaggerated importance to small differences of command. The main features of the work were normal enough, except that Major Lawson skilfully utilized an existing bank and fence as a parados. Ground otherwise dead in advance of the main line was well swept; the latter was flanked for some distance, while its fire to the southward was not of sufficient volume to deter the enemy, were he so disposed, from pushing towards the left rear of the position.

### *3rd Day.—Attack.*

It will not have escaped notice that the attack operations of the following day necessitated for all concerned a complete reversal of the horizon of view; a course which may not at first sight commend itself to those who were not actually present at the exercise. It may indeed have been preferable in the interest of abstract truth that a different body of officers, unacquainted with the plans of the defence, should have designed the attack; and that an independent umpire should have arbitrated between the two. It is, however, probable that no part of the instruction was more valuable than the abrupt transition of the field of view which was thus imposed on the imagination and critical faculties of the students present. The element of unreality, such as it was, only presented difficulties as a matter of fact within the mental horizon of the author of the scheme; and more especially when it devolved upon him to assign the strength of Blue and Red forces respectively. His aim was to surmount such a purely subjective difficulty by stating the problem as follows. For the defending force the main point at issue was how to hold a given front with the minimum proportion of good troops. For the attack, on the other hand, the question was not how to assail the position with the smallest force capable of any chance of success, but how to organize ample means of attack in such guise as to ensure

victory. There were certain incidental advantages in this treatment. A defensive attitude can on general grounds hardly ever be justifiable, except with the minimum quota of reliable troops. In the attack, the principal difficulty is how best to utilize a presumable superiority in force. The application of the cardinal principle of the densest concentration on the decisive points and a proportionate attenuation elsewhere is *the* tactical problem of the day, and one to the solution of which some contribution has, it is hoped, already been given in these pages.

The orders of the 26th (*see* Appendix) give the lines of advance assigned to the several divisions, &c. It was found convenient to restrict attention, on the 27th, mainly to one of these—the road Ashampstead Common, Bere Court. The study of advanced guard organization (*vide* Appendix for present case) is never so valuable as when its rôle is marked off by an unmistakably definite set of conditions. The following features are all that can here be summarized. When formed with a view to battle the several fractions must be drawn more closely together than is usually recognised:—*i.e.*, the intervening distances are much reduced. While as many guns as possible are put in the most forward position admissible, the initial delay tactics of the enemy must be met by the most mobile form of escort feasible. Mounted troops, invaluable though they are with the van-guard, absorb a great deal of depth, and are hardly adequate to the need. In a country so well provided with roads as Berkshire, cyclists are admirable, but they cannot be intercalated midway in the columns; whilst even in the intervening spaces their freedom of action is much hampered. It should be laid down by authority that they always march in these interludes, and between the successive fractions, but with the utmost latitude of choice as to pace and position, and that they be used sparingly as orderlies. It should never be forgotten in detailing the order of march that, though an offensive action is contemplated, the “chance encounter” with large forces, also bent on attacking, must be provided for; and that the tactics appropriate to such contingency are the rapid assumption of the initiative in (for the time) superior force. Both considerations point in the same direction as regards the reduction of the distances. The day’s orders accentuated emphatically the paramount necessity of peremptorily forbidding the advanced guard infantry to open the *main* attack; its rôle being purely preparatory, and to frustrate the enemy’s efforts at initial delay. The latter, however, demand a strong force of infantry, probably more than one battalion. All writers appear, however, to have overlooked the necessity that this infantry should not merely be told off as “right and left” for deployments, but should be detailed from *each* of the different units which follow, even at the risk of splitting up battalions. In fact, the preservation in their integrity of the larger units of command, when once the *main* action opens, is a matter to which all other considerations (such, for instance, as the symmetry of the advanced guard) must give way.

Some interest will, it is hoped, attach to the relative claims of the

several objectives of decisive assault open to the Blue Commander. The position presents us with no instance of "keys," considered in their topographical relation. An assault directed on any one point of the frontal defence has in this case nothing special to recommend it. The choice is, therefore, restricted to that between the two flanks. Certain considerations would, perhaps, point to the southern or Theale flank as the more vulnerable of the two. The reasons for the selection of Pangbourne may perhaps be regarded as insufficient, but are given for what they are worth. The capture of the village, if perchance strongly occupied, would be a task of much difficulty and immense loss. It is probably, however, correct to infer that many commanders, misled by the nostrums of our tactical writers, would, on account of its distance ahead, fail to garrison it. It would, moreover, require a large garrison to hold it as Bazeilles was held. At the worst its relation to the country round is such that, even if not carried, it could be masked by one battalion, and thenceforward ignored in the further prosecution of the attack. An assault on Theale would appear to the Red Commander more likely, and the chances of a counterstroke in that quarter more promising. This, combined with the reduced distance on that side to Reading, would probably lead him to locate his general reserve near that flank; and, if so, the latter force might be held fast there by vigorous demonstrations of attack. If a counterstroke in force were to imperil the 4th Division beyond Pangbourne, the G. W. Railway bank would protect the latter to some extent from its incidence, and the village itself would by that hour be available as a bridge-head to cover the retreat. Purley village also could probably be seized without much fighting, and its possession would compromise the rest of the position. The artillery positions of attack, though falling short as regards powers of convergence, are very superior in point of command and extent to those on the other flank.

With regard to Pangbourne, again, attention is drawn to the temporary *masking* of a strong tactical point which cannot be carried. The tendency of such points in actual war is to act as a powerful magnet, drawing to themselves forces, large out of all due relation to their intrinsic value. Witness Bazeilles, Frossard's position at Gravelotte, &c. Commanders should make sure of curbing these tendencies, and, when foreseen, by express and emphatic stipulations in orders.

Much stress was laid throughout the day's work on the co-operation of the invaluable field companies with the infantry and artillery of their divisions; and it is some satisfaction to reflect that an unconscious tribute was thus paid to the soundness of those principles which Captain Scott Moncrieff has not long since so ably advocated before this Institution. It is difficult, indeed, to see how without their help either arm could have advanced at all. It was quite essential that the organization for this purpose should have been carefully worked out, perhaps rehearsed, previously. The bridging of the Pang and numerous dykes, the making of partial roadways over the soft and sloppy meadows for the near advance of the guns; the

cutting of paths through the copses and withy beds; the destruction of wire and obstacles—all necessitated minute prearrangements. It was agreed that a definite place in the battalion-attack formations ought to be assigned to detachments of Royal Engineers, aided by parties of partially skilled workmen from the infantry. It may, perhaps, not be inopportune to enquire at this stage, whether any gentleman present has (with the valuable exception described by Captain Scott-Moncrieff) ever seen any practice of the kind either at Chatham, or our great practical school at Aldershot, or elsewhere; and, if not, why so indispensable a training should be conspicuous in our Service by its habitual omission. We have, it is true, in compensation, frequently seen our sappers doing work which the infantry would have to do for themselves in actual war. It is hard to say whether the normal omission or commission of such procedure is the more pernicious.

Commanders of units employed on the sections of front intended to be "masked" would, of course, proceed to fortify the woodlands, farms, and other points of farthest advance which they had won. The nature of the country, as already observed, rendered this task an easy one; and I have no doubt myself but that even fewer troops than those assigned would have sufficed to hold their ground against all possible sallies.

The great lesson which the day's work served to carry home to my own convictions was a different one—the extreme difficulty, namely, attending the leading of brigades and divisions to their own objectives. To select previously, with the aid of map and calm unhurried examination of the ground, certain conspicuous bearings defining the flanks of the attacking units was, perhaps, not so easy a matter as it sounds. To convey these decisions to Commanders in such manner that they cannot be misunderstood was more difficult still. To carry out the instructions with minds taken up with 50 other urgent pre-occupations amid the tumult of battle would be a task almost beyond human capacities. The orders of the day provided as best they could for this most palpable peril by detailing special staff officers for no other duty than to guide the flanks of the larger units. It would be preferable that these should be doubled, or have staff sergeants to assist them; and that officers and non-commissioned officers, specially selected for cool-headedness and keen observation, should be habitually trained with forces, skeleton and otherwise, not over the normal 800 yds., but over an advance in varied country of 2 to 2½ miles.

The main difficulty of the day was, no doubt, the purely subjective one of focussing to the imagination the sum total of the conditions which had to be taken into account in estimating the chances of failure or success. And it is doubtless here that the school of actual war is so immeasurably superior to all manner of rehearsals in time of peace. The 10 or 12 batteries pouring shrapnel on to some 600 yards of woodland form, beyond question, an element of force extremely difficult to calculate. And so, too, with the effects of the musketry fire, and with the collapse of nerve power after 10 hours of fighting. The imagination even of an expert from Hythe or Okehampton is slow to grasp conditions which he can neither see nor hear; and the data



to guide the judgment in such matters are few and uncertain. The net impression was, perhaps, one of instinct alone; but that pointed for the most part to an effect deadly, irresistible, and cataclysmic, when once the feeble voices of the three or four Red batteries in this quarter had been silenced; and there are instances such as the Calvaire d'Illy and the Bois de la Garenne to support the conjecture. Some, however, of the officers present looking too exclusively at that side which was more patent to their perceptions—the issue of the infantry collision only—foreboded defeat.

The rule of taking the ground and weather as we found it, and not on any supposititious basis, had, at times, its inconveniences. The scheme of attack had contemplated a repetition of the weather conditions of the previous day, forecasting sufficient clearness of atmosphere to give a fair view of details up to (say) 3,500 yards. As events turned out, a heavy snowstorm commenced about 11 A.M., and shrouded under an opaque veil every object more distant than 500—600 yards. What effect would this have had on the fortunes of the day? The outpost and delay combats ahead would have been unaffected; the 1st artillery positions would have been occupied, and the duel would still have resulted in the partial withdrawal of the guns of the defence. The turning of fire on to the enemy's trenches would have followed, and lasted for upwards of an hour, before these latter became lost to sight (*vide* time table with the map). The snowstorm came too late to save the assaulting divisions the labour and loss of fighting their way up to the Pang. It would facilitate, however, the formidable passage of the meadows, and the seizure of the hither side of the copses; also the bridging of the Pang, and the storming or masking of Pangbourne. The guns, too, now useless in their contemplated positions, would be better able to cross the river, and come into action at various spots, just in view of the crest. There, however, for a time they could scarcely have held their own; and the further advance of the infantry, unsupported by the guns, must have been arduous and painful in the extreme. Long-range musketry must have been largely employed to compensate for deficient artillery support, and before dark the superior concentration on the northern flank must have told imperiously.

#### *4th Day.—Rear Guard Study.*

The 4th day's operation presents the spectacle—so familiar in tactical treatises, so conspicuous by its absence in practical military training at home—of the withdrawal of a rear-guard through enclosed country, imposing delay at every suitable point on the advance of vastly superior forces.

Sir E. Hamley, in touching briefly on the question of strength of the "containing" force, suggests its being calculated as a definite proportion of the main army which furnishes it. This, however historically justifiable, is probably a somewhat rough-and-ready rule to apply. Tactically speaking, the strength depends in English country on the distance which separates the parallel or convergent



roads by which the retreat is being conducted. In mathematical language, it is a *function* of that average distance. It is also, of course, a *function* of the *density* of the enclosures, of the arm in which the head of the pursuing force preponderates, and of the nature of the defiles that lie in the path. These may be looked upon as variables of second rank. Still more, however, depends on the *number of days* that the containing force is left unaided to its own resources. On the road of average south-country type a mixed brigade would be a strong force for the purpose; and, in default of better, a battalion, or even a detachment of two companies, might do much. Guns can seldom be used to advantage in any numbers. Mounted infantry are extremely useful on an enclosed flank, or as a support to cavalry on an open flank; while cavalry holds its pristine pre-eminence on a very open ground. The value of cyclists as the immediate tail of the column when retiring from point to point impressed itself strongly upon all. Machine-guns here, as indeed at every point of the operations, were always demanded in far larger numbers than our present establishment could possibly supply. I am quite satisfied that a wholesale increase in the latter would prove a real economy of power.

The most interesting feature in the day's work was, perhaps, the estimate of delay imposed on the enemy's advance. The rear-guard being a rather large one for its purpose (a brigade + certain details), great stress was laid on employing the infantry in alternate moieties. The positions adopted for making a stand were unusually frequent, but the unsound tactics of occupying every one of them were pointedly avoided. In a distance of  $7\frac{1}{2}$  miles it was agreed, however, that three of these might have been held for delay purposes; or even four as a *pis-aller*. Other intermediate sites could, in the event of undue pressure, have been temporarily occupied by the few mounted troops and cyclists forming the actual tail of the column. The perfect security of a front of extension, wide beyond all precedent, for each battalion was insisted upon by myself, although fully conscious of the charge of heterodoxy to which I lay myself open. The frontal defence has, indeed, nothing to fear in such cases. The faculty of delay is based on the time taken by the pursuing force first to feel for and then to assail the flanks. The cardinal advantage of an enclosed country, apart from minor gains too numerous for mention here, consists in the fact that the pursuing force must, after each combat, re-form in a suitable column of route on the main road. In the appendix will be found an estimate of the delay based on these data, compiled by two officers working independently, which is of some interest as indicating of how purely arithmetical a character the calculation is; and, presuming a most moderate amount of skill or practice on the part of the commander, it is difficult to conceive that the most dashing enemy could seriously falsify its accuracy, which is based, if anything, on the least sanguine premises.<sup>1</sup> It would appear, then,

<sup>1</sup> This estimate received at the time the approval of Lord Methuen, commanding the Home District, who was present on the ground.

that  $10\frac{1}{2}$  hours was the smallest interval of time in which a pursuing force could have hoped to accomplish this  $7\frac{1}{2}$  miles of road.

It is evident, moreover, that the factor of fatigue must in such cases not be lost sight of. I have already stated that the infantry of the rear-guard was worked in alternate moieties. The pursuing force, on the other hand, must in fairness be credited with an overwhelming superiority, its crushing power being limited merely by considerations of time, space, obstacles, and fatigue. The present occasion gave an instance of the gain accruing from the presence in council of so many officers of insight and experience, discussing a series of definite issues on the ground directly concerned. Neither maps and lecture room, nor on the other hand war service or peace manœuvres can furnish either opportunities or arenas of salutary controversy in any equivalent degree. It was pointed out by Colonel J. Whitting, referring to his own practice in India, that the troops forming the pursuers' van-guard should always be relieved after every serious check. It is easy to see that this simple expedient, while effecting a vast saving of invaluable time and energy, is the almost automatic outcome of the approved method of pursuit. At each stand the leading troops are those which would naturally march off to feel for either flank of the enemy, the gap in the centre being filled by those next arriving. On the former, therefore, would fall the fatigue and stress incident to the attack which followed. Other troops remaining halted and resting behind the centre during the inevitable delay would naturally be the freshest and best suited to take the lead in the next advance, and for conducting any subsequent attack called for by the enemy's tactics. Eventually, therefore, every detachment of the pursuing force, no matter how large the latter may be, will take its turn of the necessary loss and fatigue. Has anyone ever witnessed any practice of similar character in England? It is to be hoped that many now present have. I can only regret that such has never been my own good fortune.

The point in rear-guard operations which is most likely to escape the vigilance of even the best Staff officers is also, unfortunately, that in which neglect involves the gravest peril. It is clear that the general orders governing the day's work should specify with unerring precision the boundaries of the commander's lateral responsibility; in other words, the next parallel avenues which are held by other delay detachments, not of his own command. This, for the moment, presents him with no task of undue complexity; but the network of roads and avenues of various sorts that intersect the average English country will soon increase his difficulties. Roads convergent and divergent, new avenues which open up without abutting on his own line of retreat, railways and waterways which become suddenly accessible must be provided for, as soon as ever they become relevant to the operations, or, in other words, open a passage by which the dashing flankers of the enemy might reach the column, or anticipate it at some defile in the rear. The perception of the evidence of fresh danger of this character requires to be continually quickened, or the peril will be overlooked at the critical moment. The security of the

Hartley-Wespass position on this day turned purely on the question as to whether precautions of this character had been duly taken or omitted.

Lastly, it may be asked, what answer must be given to that school of tacticians which maintains that delay operations of the type so familiar to students of the Napoleonic era have ceased to be practicable under the more destructive fire of the present day? The action at Münchengrätz, and perhaps some of Chanzy's combats during the retreat on Le Mans, might be thought to give a satisfactory answer to this enquiry. Admitting, however, some defect in the matter of recent war experience (mainly because both French and Turks gave a singularly unscientific exposition of sound tactics under the new conditions), it would appear to the writer of this paper that the advantages of delay tactics are now realizable to an extent that is entirely without precedent in the history of warfare. It may be true that the same troops will not stand more than one or two hammerings with the breech-loader and machine-gun in the same day's retreat. But will not the same vulnerability apply in a still higher ratio to a pursuing force, and especially to its most dangerous component, viz., its mounted troops? Is it not more than ever unnecessary, looking to the quadrupled extension of effective range, for the rear-guard troops to be exposed for any length of time to this formidable fire? Not only does the enemy's deployment take place at increased distance, but the radius of the circuit round the flanks is also proportionately enlarged. At the same time, the greater range of artillery has compelled deeper distances between the fractions of the head of pursuit. These, of course, are purely theoretical considerations, and the retreat from Basingstoke could throw little light on the question. The conviction, however, of the officers who were present on the spot would count for something; and I believe I am correct in stating that not one had any doubts as to the perfect feasibility of the method adopted to achieve its purpose, without imposing more than a very tolerable modicum of physical or moral stress on the troops engaged.

The above are but examples culled out of many which formed matter for discussion during the four too brief days of the imaginary campaign at Reading. There were indeed many others, including some important illustrations of *strategical* principles, which the too meagre space at my disposal forbids me even to enumerate. But it may be insisted that numerous burning questions affecting the practical conduct of military operations cannot be even discussed, however faultily, or forced on the attention of the present generation of officers, without bearing abundant fruit in the intellectual development of the soldierly side of the character. The habits of mind engendered by the mere presentation of such problems are of greater value even than the acquirement of so-called actual knowledge. Who is to say that the latter is after all sound in substance, or that, when digested, it will infallibly lead its possessor amid the stress of action to draw correct inferences? The cultivation, however, of his

reasoning powers, the kindling of the soldier's imagination, the quickening of his perceptions as to the true relations of the leading data of the science, the comradeship of letters and art in the most practical and most inspiring of the modern fields of study, these are inalienable treasures which the officialism, the unhappy predominance of mercantile pursuits, the trumpery social ambitions, the deplorable absence of the sterner soldier's training, which characterize the present day, cannot deprive him of. It is hoped that the recent introduction of out-of-door studies may, with all its misconceptions and defects, form some contribution towards so invaluable a consummation.

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REMARKS BY MAJOR E. SATTERTHWAITE, 2ND VOL. BATT. THE QUEEN'S OWN (ROYAL WEST KENT REGIMENT).

I feel that an apology is due to the members of this Institution for my intruding any remarks on this occasion, when so lately as last year I read a paper on the subject in this theatre. I have, however, acceded to Colonel Smith's request to put on record a few notes as to the administrative working of this exercise, leaving the more important tactical questions for his abler treatment.

The success of the previous expedition to Leith Hill in the winter of 1892 prepared the executive of the Home District Tactical Society for a large attendance in 1893, and it was necessary to choose a central rendezvous where ample lodging accommodation could be obtained. The town of Reading supplied not only a good field for skeleton manœuvres in its neighbourhood, but the hotel and lodging accommodation was excellent, and a better headquarters than the Queen's Hotel would be difficult to find. Captain B. H. Latter again gave his valuable services as Mess President.

49 officers' names were originally sent in, but various causes (principally influenza and its effects) caused 11 of them to be withdrawn, and exactly the same number of post-entries were received, principally recruited from the local Volunteer Battalion, the 1st V.B. Royal Berkshire Regiment. Of these 49, 12 were Regulars, 3 Militiamen, 2 Yeomen, and 32 Volunteers. 21 were field officers. The names included the General Officer Commanding the Home District, 3 Officers Commanding Regimental Districts, and 1 Officer Commanding a Volunteer Brigade. The D.A.G. for Militia, Yeomanry, and Volunteers was prevented at the last moment from attending. The feature of the year was the large number of country officers who attended, many of whom became members of the Society for the purpose; the purely London officers numbered only 18 out of 49.

A reference to the Appendix will show that on the first day the total force employed on outpost duty was  $2\frac{1}{2}$  battalions, 2 guns, and some details, and about 40 officers were present to carry it out. Roughly speaking, captains had command of piquets, majors of supports, and colonels of reserves. The work was done thoroughly and in detail: the boundaries, not only between sections but between

piquets, having been previously laid down by the Director of Operations. A large amount of time was taken and a large amount of ground gone over.

I may mention here that the system of marking positions and boundaries with red and white rags answered well, and helped very much to invest the skeleton manœuvres with reality.

The second day was employed with the occupation of an extensive position for defence, the boundaries as before being laid down by Lieutenant-Colonel Smith. The difficulty of the task was thereby very much lightened, and the work was still further simplified by the fact that one division only was considered in detail, the position of the other division and the reserve troops being merely reconnoitred and roughly indicated.

On the third day, the attack on the same position was conducted on the same lines; one division only was worked in detail, and in the final attack only one brigade. The commanders of the component parts of the advanced guard were questioned as to their dispositions to attack first the outposts, then the advanced parties, and finally the main position, being confronted in each case with the officer who had planned the defence in the former day's work.

One officer only was, as a rule, assigned to the other divisions to reconnoitre and report on the features of their respective lines of advance.

The zones of fire from the enemy's main position, as laid down in "Infantry Drill," were marked with large flags, but, as a matter of fact, a heavy storm of rain and snow prevented any distant view on this day.

On the fourth day, four successive rear-guard positions were examined for occupation, each by about two battalions and some details, the positions having been previously reconnoitred and chosen by the Director of Operations.

I think that the officers who were present will probably bear me out in saying that, as a rule, we were able to assign fairly reasonable commands to the officers in accordance with their rank; and those who were not present may possibly hardly realize the difficulty of framing suitable schemes one or two months in advance for a party of officers whose rank and numbers are, up to the last minute, almost entirely unknown.

A new feature this year was the short discussion which took place each evening after dinner. At this time the scheme for the next day was given out and tasks assigned; the messages supposed to have been received from the outposts and neighbouring troops were read and posted on the notice board, and the strategic situation explained by Lieutenant-Colonel Smith on a specially prepared map ( $\frac{3}{4}$  in. to 1 mile), embracing the country between Poole, Oxford, London, and the Channel.

It is hoped that this expedition may become an annual one, and in connection with this a few words as to the future development of this system of learning tactics may not be out of place. To be frank, the number of officers attending from London was disappointing: the

large number of country officers who attended this exercise, and the large number who attend similar exercises when undertaken in the provinces, create a comparison rather unfavourable to the Londoner. Everything was arranged to enable officers to run down from town and back for each single day's work, but hardly any availed themselves of this opportunity.

It is to be hoped that if this system of instruction continues to spread in the provinces, inter-society exercises may be instituted before very long.

Further, the number of junior officers attending was disappointing. In order to familiarize junior officers with these methods, it would be very advantageous if the Committee of the Home District Tactical Society could arrange for one or two single day exercises of a simple character in the summer or autumn.

No one who has attended this or similar exercises can fail to be struck with the superiority of such a system over any purely theoretical text-book instruction in tactics.

The small amount of time which Militia and Volunteer officers can devote to field work would seem to render desirable the establishment of periodical tactical courses, at which some practical insight could be gained into tactics in relation to ground. The ordinary officer reads and crams for the tactical examination, without ever seeing in practice the theories he is explaining; he is called upon to answer abstruse questions on cavalry and artillery tactics, while the chances are he has very seldom seen a squadron or a battery on parade. If he fails to pass he is discouraged, and is, to a certain extent, a marked man among his friends; if he is successful he runs the risk of thinking himself an authority on the subject, while, in reality, his practical experience is very small. Could not this be overcome by establishing at Aldershot and at some northern station, once or twice a year, a practical course of instruction in tactics for Militia and Volunteer officers? The course would be on the lines of the Schools of Instruction in Drill. A good deal could be done in a fortnight if the rudiments of time and space and elementary formations were previously mastered.

At the course all the work would be done out-of-doors, except an afternoon lecture, in which the next day's work would be foreshadowed.

At the end an examination could be held and certificates granted, enabling the Volunteer officer to receive the grant.

I venture to think that such a course would be a far more satisfactory method of gaining the certificate in tactics than the present purely theoretical text-book examination, which, from its uncertainty, is viewed with more or less dread by the Regulars and Volunteers alike.

## APPENDIX.

## HOME DISTRICT TACTICAL AND WAR GAME SOCIETY.

## OUTDOOR STRATEGICAL AND TACTICAL EXERCISE.

February 24th to February 28th, 1893.

*Under the Direction of Lieut.-Col. W. W. M. SMITH, h.p., R.A.*

## STRATEGICAL SITUATION.

*At Sea.*—The Enemy has obtained a tolerably complete command of the Channel, H.M.'s ships in home waters being for the most part confined to the fortified harbours. The Mediterranean Fleet and Squadrons on more distant Stations are entirely occupied with the endeavour to keep open the main ocean-supply-routes to the North of Great Britain. The coast-line from Brighton to the Wash is looked upon as so well watched and fortified as to be protected from the invasion of large bodies of troops.

*On Land.*—An Invader has landed large forces, estimated at not less than two Army Corps, between Poole Harbour and The Needles, and is pushing Northwards, headed by a vigorous Cavalry. He has defeated a force of 25,000 men collected from the West and South-West in a defensive position near Salisbury (22nd February), and Advanced Detachments have been seen on the Kennet and around Hungerford.

*Subjects recommended for Preliminary Study by all Officers concerned, prior to the commencement of Hostilities.*

(1.) The strategic value of Reading with reference to the several unknown objectives of the Enemy, arising out of the above situation.

(2.) Mounted Officers are invited to mark off on any good small-scale map the disposition of two Cavalry Divisions which are ordered to leave Reading at dawn on the 23rd, showing the intended location of the Contact Squadrons, &c., by nightfall on that date.

(3.) Other Officers are invited to study the several routes of advance to the West, South, and South-East on the hypothesis of its being intended to use Reading as a pivot of *offensive* strategy.

(4.) Engineer and other Officers who have time to study the locality should examine the valleys of the Thames and Kennet, with a view to the selection of sites for double or single bridge-heads in connection with possible operations. Schemes of bridge-head defence may be prepared without entering on detail.

## TACTICAL STUDIES.

*First Day, Feb. 24th.*—An outpost Cordon veiling a position taken up to arrest an advance on Reading from the West.

*Second Day, Feb. 25th.*—Preparation and Occupation of the latter position in detail.

*Third Day, Feb. 27th.*—Dispositions, Advanced Guard and formal attack to carry the same position.

*Fourth Day, Feb. 28th.*—A small Detachment delays the enemy's advance in force on Reading from a new and unexpected direction.



## STRATEGIC STUDIES.

It is proposed that the Director of the Operations should each evening initiate a short discussion or Council of War to be held at Head Quarters after the dinner-hour on the fresh strategic situation created by the march of events as successive bulletins reach him.

By order,

W. W. M. SMITH, *Lieut.-Colonel.*

*Director of Operations.*

1st December, 1892.

## 1.

## General Situation on the night of February 23rd.

The invader is known to have occupied Burbage and Hungerford in force. A strong Advanced Guard is threatening Newbury. The movements of his Cavalry appear to indicate a hostile advance on Reading from the West.

## SPECIAL ORDERS ISSUED FROM READING, 5 P.M. 23RD FEBRUARY.

To G. O. C., 3rd Brigade,

"You will be in command of a force, which will be assigned to you for the purpose of forming an outpost Cordon between the Thames and Kennet Rivers. This is to be established as soon after 9 A.M. to-morrow as practicable, in order to cover a concentration of troops and the construction of defences on the position commanding the Pangbourne—Theale Road.

"Troops detailed as follows:—Infantry, 2½ Battalions and ½ Company; Signallers, 3 Sections; Cyclists, 20; Mounted Orderlies, 6; R. A., 2 guns; Machine Gun, 1."

## DETAIL FOR OUTPOST DUTY ON FEBRUARY 24TH BY O. C. OUTPOSTS.

Outpost line is divided into two sections: the Right Section (4,330 y.) is separated from the Left Section (4,100 y.) by the Pang brook.

The line of defence of Right Section runs roughly as follows: Lower Bowden, Upper Bowden, Bere Court Copse, Dark Lane Copse; that of the Left Section, Copses on the Down East of Bradfield College, crossing Mare Ridges near the West border of Englefield Park and cutting the main Theale-Newbury Road a little East of the 11th milestone.

*Right Section:—*

1 Battalion and 1½ Companies supply

No. 1 Support, linked to Nos. 1 and 2 Piquets; left Boundary, North edge of Bere Court Copses;

No. 2 Support, linked to Nos. 3 and 4 Piquets;

Reserve in Tidmarsh and Pangbourne.

*Left Section:—*

1 Battalion and 3 Companies supply

No. 3 Support, linked to Nos. 5, 6, and 7 Piquets; left Boundary, Parker's Corner of Englefield Park;

No. 4 Support, linked to Nos. 8 and 9 Piquets;

Reserve at Cross Roads West of Wickcroft Farm.

## ORDERS BY LIEUT.-COLONEL B., COMMANDING LEFT SECTION.

"Capt. E., commanding No. 3 Support and its linked Piquets will march by the direct road from Theale towards St. Mark's Church, in Englefield Park, and will thence proceed to cover the front named in the orders of the O. C. outposts.

"Capt. F., commanding No. 4 Support and Piquets affiliated to it, will march by the Newbury High Road to Theale Green, where he will detail his Piquets as directed in the orders of the O. C. outposts.

"The arrangements taken for covering the front and flanks of each Detachment during the advance will be verbally communicated to me on my arrival on the ground."

Orders of a similar tenor are issued by Lieut.-Colonel A., commanding the Right Section.

#### INSTRUCTIONS FOR OFFICERS COMMANDING UNITS.

Each will be responsible for giving the detail of his own unit, for hasty fortification, for patrolling, for the transmission of intelligence, also for withdrawal and resistance of his own unit.

2.

25th February, 1893.

EXTRACTS FROM GENERAL ORDERS PUBLISHED IN READING, 5 P.M.,  
24TH FEBRUARY, 1893.

"Reports received this afternoon announce that Detachments, apparently forming reconnoitring Parties and Van-guards of large hostile columns, are in contact with our outposts at Basildon, Ashampstead Common, and Eastward of Stanford Dingley. A telegram published in a Belgian newspaper appears to indicate the intention of the enemy to seize Reading, with a view to securing the bridges there, and separating the Army of the North from the force collecting at Guildford.

"The Lieut.-General commanding in Reading is instructed, at all costs, to hold the important position, Pangbourne-Theale, for at least 2 days; and, if attacked, to do the enemy all the damage possible. The capacity of taking the Offensive towards the West, South, and South-East is at the same time to be retained, and provided for as far as possible.

"It is estimated that the Enemy will have difficulty in seriously assailing the main position before 10.30 A.M. Schemes of Defence to be prepared accordingly.

"Force at disposal:—1st and 2nd Divisions; —th Regiment of Cavalry; 5th Infantry Brigade; —th Field Company R.E.; 2 Batteries R.A.

"The 1st Division will hold the Northern moiety, the 2nd Division the Southern half of the Position. The Boundary between them will be a line passing East and West through the Southern edge of Sulham Churchyard.

"The Cavalry Regiment, the 5th Brigade, and other unallotted details, will form the General Reserve, under the command of Brig.-Gen. E., which will be placed in rear of the front, near the left (South) flank of the line.

"All spare troops not indispensable to the Sections assigned for Frontal Defence, as well as all details previously employed for advanced delay-action, will be sent to strengthen the General Reserve, which will be retained to act under the immediate directions of the Lieut.-General commanding."

3.

27th February, 1893.

N.B.—It will be observed that the Officers of the H.D.T.S., who at other times represent the Defending Army, will on this day represent the Invaders.

#### GENERAL SITUATION.

The G.O.C. the Invading Army received on the 26th February orders to advance Eastwards, disperse the Defenders' Forces believed to be collecting between the Kennet and Thames, and seize the Bridges and Railway Junction at Reading.

*Bivouacs of the Troops composing the Invading Force on the night of the 26th February*:—1st Division, Woolhampton and Chapel Row; 2nd Division, Buckle-

bury and Stanford Dingley; 3rd Division, Yattendon; 4th Division, Ashampstead; Army Corps Troops and Cavalry, Bucklebury Common; Advanced Guards two to three miles ahead of each column.

EXTRACT FROM THE INVADING COMMANDER'S ORDERS ISSUED 5 P.M., 26.2.93.

The Army (1 Army Corps and 1 Division, 2 Regiments of Cavalry, 1 Battery H.A., and  $\frac{1}{2}$  Battalion Mounted Infantry) will proceed to attack the position commanding the Theale—Pangbourne Valley. The Divisions will move off in accordance with instructions already issued, and in sufficient time to reach the Enemy's out-post line (therein indicated) by daybreak.

The Hostile Posts and Advanced Troops will be vigorously driven in and the attack on the main position will be commenced and carried out in exact conformity with the Orders.

Statements of prisoners taken this day give evidence of defences already taken in hand to meet our advance. Commanders will make special dispositions for the penetration of copsewood entanglements, and for the passage of the Pang by the Guns and Ammunition Carts, &c.

The G.O.C. will march at the head of the Main Column, proceeding through the North Side of Bere Court, and in default of later orders to the contrary, will establish his Headquarters during the main engagement near Blenheim Barn, on the hill-slope overlooking Tidmarsh.

EXTRACT FROM CONFIDENTIAL INSTRUCTIONS TO DIVISIONAL AND OTHER COMMANDERS.

*General Scheme of Attack.*

(1) Mask whole front, Theale—Pangbourne. Endeavour everywhere to seize the line of osier-beds and copses East of the Meadows, and hold these throughout the day.

(2) Send 1 Battery H.A., 1 Squadron Cavalry, 50 Cyclists, and 200 Mounted Infantry to Right Bank of Kennet, to enfilade the position from near Burghfield.

(3) Make a strong feint attack to assail Pigeon House, and menace South flank of position, to be converted into a real attack about 4 p.m. if suitable and not previously countermanded. Commence as early as possible; at any price hold fast whole force of Enemy in that direction.

(4) Assault the section of ground on the ridge East of Purley Park, about  $\frac{1}{2}$  mile in frontage; right flank to avoid close contact with hostile flanking fire from Sulham Village; left flank aided if necessary by a flank attack directed between Purley House and Purley Village, utilizing the G. W. Railway, if possible, to screen the enveloping movement; detach skeleton force to watch the Thames from Pangbourne to Purley, and hold passages. Village of Pangbourne, if not taken early in the day, to be isolated and masked. The Corps Pontoon Troop and Field Company R.E. will be at the disposal of the G.O.C. the assaulting Divisions (Nos. 3 and 4).

(5) (a).  $\frac{1}{2}$  to  $\frac{1}{2}$  the available Guns will direct a fierce fire in aid of attack (3); but endeavour to reserve  $\frac{1}{4}$  of Ammunition for subsequent aid of assault (4).

(6) (b).  $\frac{1}{2}$  the Guns prepare assault (4). During early part of day a very slow fire from an extended front with a view to shake the Enemy's Infantry on the section of ground assigned, but so as not to indicate the coming assault. Arrange special supply of common shell from Reserve Ammunition columns for demolition of Pangbourne Village.

(7) Each Column of attack to detail its own Advance Guards. These, after driving in the Enemy's out-posts and advanced parties, and being relieved, will merge into second Line or Reserve. G.O.'s will issue stringent orders on this head, specifying time and place.

(8) The opening of serious attack by the Infantry to be preceded, in every instance, by the usual reconnaissance of Battle-Patrols.

(9) It is the desire of the Commander-in-Chief that each main attack should be

opened at the earliest hour possible. While allowing full discretion to Divisional Commanders on this head, he does not anticipate, from the nature of the ground, the necessity of any long postponement of the initial stage of the Infantry advance, due to the requirements of the Artillery preparation.

*Assignment of Troops for Attack:—*

Feint Attack as per 3. No. 1 Division.

Masking as per 1. To extend from North Street to the Northern Outskirts of Tidmarsh Village (about 1½ miles). No. 2 Division.

Assault and turning movement as per 4—Nos. 3 and 4 Divisions.

Detachment on Right Bank of Kennet—Army Corps Detail.

In each case the flanks of Divisions will be marked throughout the day by Officers of the A Corps Staff, or their deputies. Nos. 1 and 2 Divisions will each send 1 Battalion to the General Reserve, which, with unallotted details of corps troops, will be stationed on the East side of Bere Court, under the command of General F.

*Roads Assigned:—*

Right Attack (1st Division)—

(1) High Road, Newbury—Theale.

(2) Chapel Row, Beenham, Mare Ridges, Englefield Park, North Street.

Masking (2nd Division)—

(3) Stanford Dingley, Bradfield, Chalkpit Farm.

(4) Stanford Dingley (along North side of Pang Brook), Tidmarsh.

Left Assault (3rd and 4th Divisions)—

(5) Yattendon, Ashampstead Common, Buckhold Farm, North side of Bere Court.

(6) Ashampstead, Upper Basildon, New Town, Pangbourne.

(7) Ashampstead Green, North of Upper Basildon, Home Farm, Railway Cutting to Pangbourne.

Corps Troops by Roads (4) and (5), as soon as clear of above Columns, where not otherwise detailed.

28th February, 1893.

4

REPORTS RECEIVED BY G.O.C., DEFENDING ARMY CORPS IN READING, AFTER THE ACTION OF 27.2.93.

A. *Telegram from Intelligence Department, London, received 8.30 p.m., 27.2.93.*

"The Enemy's Third and part of another Army Corps, headed by Cavalry, appear to be advancing on Reading by forced marches from the South, his previous movements against the Pangbourne Position being only a feint."

B. *Report from G.O.C. Pangbourne Position.*

To G.O.C., Reading.

Little Heath, 8 p.m., 27.2.93.

"The Enemy appears to be withdrawing towards the West and South-West, under cover of strong Detachments of light troops."

C. *Report from G.O.C. Cavalry Brigade, at Silchester.*

"I am watching the road Aldermaston—Wolverton, Hannington; there is no hostile Detachment East of that line."

D. *Report from Brig.-Gen. Commanding Detached Force at Basingstoke.*

To G.O.C., Reading.

Chineham Farm, 7 p.m., 27.2.93.

"Have been driven back by superior numbers to the North side of S.W. Railway, which I can hold till morning."

*E. Verbal Report by D.A.A.G. 15th Infantry Division.*

"The 30th Brigade arrived at Reading this afternoon from Henley, and the remainder of the Division should be here by mid-day to-morrow."

*Extract from Orders.*

From the G.O.C. Reading Army Corps.

To the O.C. Mixed Brigade, Chineham

Farm, near Basingstoke Station.

Reading, 10 P.M., 27.2.93.

"In view of the situation created by your intelligence of this afternoon's date, and the movements near Aldermaston, already wired to you, I intend to concentrate all available force at Farley Hill, thus menacing the flank of a force advancing Northwards on Reading.

"I cannot be in a position to strike before daybreak on the 1st March.

"I rely on your holding the Enemy South of Strathfieldsaye until sunset to-morrow (28th).

"Your further retreat will be on Reading direct, but you will be relieved, if necessary, at the Swallowfield Crossing of the Loddon by 9 A.M. on the 1st proximo.

"On that date you will endeavour to draw the Enemy towards Reading.

"To-morrow the 1st Hussars, hitherto veiling your Right, will retire by Vyne Park, Bramley, Fair Oak Green, Strathfieldsaye village. That regiment is placed under your orders for the present.

"The  $\frac{1}{2}$  Brigade, which has detrained at Hoole this day, has orders to communicate with you, so as to protect that flank in your retreat as far as Heckfield.

"1st Position on line, Oakridge Farm—Lickfield Farm.

"(Officers to leave Station at once on arrival.)

"2nd Position, Sherfield Hill.

"(Officers to leave for this Position immediately on receiving their orders at Basingstoke.)

"3rd Position on line, Newhouse Farm—Hartley Wespall.

"(Officers to leave for this Position immediately after discussion at 1st Position.)

"4th Position, Wellington Arms—Heckfield.

"(Officers to leave for this Position immediately after discussion at 2nd Position.)"

*EXTRACT FROM DIVISIONAL ORDERS, 3RD DECEMBER—26TH FEBRUARY, 1893.*

*Order of March of Advanced Guard and Main Body of the Column using the 5th Road, Yattendon—Buckhold Farm, &c. (includes certain A corps details attached to 3rd Division for purposes of the march only).*

Patrols. Centre and side groups (4 + 5 + 3 + 4 men).

400 yards.

Advanced party { Nucleus of  $\frac{1}{2}$  squadron furnishing advanced party (32 men).  
60 cyclists.<sup>1</sup>

400 yards.

40 cyclists.<sup>1</sup>

{  $\frac{1}{2}$  squadron of cavalry.

{  $\frac{1}{2}$  battalion of 6th Brigade (left).

Van-guard {  $\frac{1}{2}$  company R.E.

{ 2 machine-guns, 6th Brigade.

{ 3 guns R.A.

About 1,270 yards to here.

600 yards.

<sup>1</sup> The cyclists always march nearly midway in the spaces separating consecutive units of the column of march. They are reckoned at 25 men per each Volunteer battalion present.

Main-guard { C.O. of advanced guard and staff.  
 $\frac{1}{2}$  squadron of cavalry (corps troops).  
 1 $\frac{1}{2}$  batteries R.A.  
 1 $\frac{1}{2}$  battalions ( $\frac{1}{2}$  of 6th Brigade (left) 1 of 5th Brigade (right)).  
 4 S.A.A. carts.  
 9 R.A. ammunition wagons.  
 $\frac{1}{2}$  bearer company.

About 3,160 yards (inclusive) to here.

900 yards (40 cyclists in centre).

Main body { G.O.C. 3rd Division and staff.  
 $\frac{1}{2}$  squadron (corps troops).  
 1 battery R.A.  
 1 battalion 6th Brigade (left).  
 $\frac{1}{2}$  company R.E.  
 Balloon section (corps troops).  
 5 batteries R.A. (corps troops).  
 1 battalion 5th Brigade (right).  
 4 S.A.A. carts.  
 2 machine-guns 5th Brigade.  
 $\frac{1}{2}$  pontoon troop (corps troops).  
 4 battalions, 2 of 6th Brigade (left), 2 of 5th Brigade (right).  
 S.A.A. carts for 6 battalions.  
 $\frac{1}{2}$  bearer company.  
 $\frac{1}{2}$  telegraph battalion (corps troops).  
 $\frac{1}{2}$  squadron (corps troops).

About 8,790 yards (inclusive) to here.

100 yards.

Bearer company (corps troops).

Field hospital (corps troops).

Part of reserve ammunition column (corps troops).

About 9,900 yards to here.

The remainder of the reserve ammunition, the field hospital, and field park march later by a distinct échelon.

9,900 yards = 5 miles 5 furlongs.

= from 1 h. 25 m. to 1 h. 52 m. expressed in time of march.

#### TIME TABLE OF DELAY CAUSED BY REAR-GUARD OPERATIONS, 28TH FEBRUARY, 1893.

Enemy leaves Basingstoke .....	8.0 A.M.
Distance to 1st position, 1 mile = 20 minutes .....	8.20
March to flank of 1st position = 40 minutes .....	9.0
Action, say 1 hour .....	10.0
Re-formation for march, 20 minutes .....	10.20
March to 2nd position, 2 miles = 40 minutes .....	11.0
March to flank of 2nd position, 25 minutes .....	11.25
Action, say 1 $\frac{1}{2}$ hours .....	12.40 P.M.
Re-formation for march, 25 minutes .....	1.5
March to 3rd position, 2 miles = 40 minutes .....	1.45
Delay from floods at 3rd position and turning flank, 1 $\frac{1}{2}$ hours ..	3.30
March to 4th position, $\frac{1}{2}$ hour .....	4.0
Delay at 4th position, 2 hours .....	6.0

E. LATTER, Major.

F. W. PINNEY, Captain.

EXPLANATORY NOTES ON THE MAP ILLUSTRATING THE LECTURE. BY  
COLONEL C. H. COLES, CITY OF LONDON ARTILLERY.

It is possible that on first glancing at the map illustrating this lecture some slight difficulty may arise in comprehending the dispositions of the troops, especially those of the attacking force—Blue.

In working on one map some amount of overlapping was unavoidable, but it is hoped that the following explanation will make the various dispositions intelligible. To simplify matters the events of the battle are divided into periods.

Only a rough representation of the actual firing lines, both in the attack and defence, is given; in both cases it is to be presumed that companies find their own supports, and that an adequate number of distinct companies—two to four in the case of the defence—form battalion reserves.

On the morning of the 27th February the defending force occupied the following positions:—

A line of outposts extended in the form of an arc from the Great Western Railway, 1,200 yds. west of Pangbourne, to a point on the Newbury Railway 1,300 yds. south-west of Theale, shown by chain-dotted lines. (The reserves are omitted from the map.)

Pangbourne is held obstinately as an advanced post, the fields west of it by delay parties only.

Tidmarsh, Wellmann's Farm, and a few other spots are held by delay troops; Theale by an observing detachment.

The main position from Purley Hall to Langley Farm is occupied by 15½ battalions with 6 batteries and some machine-guns, the boundary of each battalion in the firing line being marked with an asterisk. In addition, a brigade, together with two batteries, is held ready for a counter-attack on the left flank, or for reinforcing the right if necessary.

The 2nd line of the main position is formed in each case by the brigade reserve, consisting usually of the 3rd battalion. The 3rd line is formed by the divisional reserve, usually of two battalions, viz., one from each of the two brigades forming the division.

Leaving their bivouacs and proceeding along the routes indicated, the various divisions arrive at daybreak at the outpost line; therefore from 5.45 A.M. to 7 A.M. is the period of the outpost combats. (That of the 3rd Division only is shown.)

7 A.M.—9.30 A.M.

Delay combats.

Artillery duel in 1st position.

Partial movement to 2nd position and bombardment of Pangbourne.

Preliminary and partial deployment of leading troops of divisions.

Advanced guards reabsorbed into their divisions.

Reconnaissance of position by mounted officers and by battle patrols of infantry and cavalry.



9.30 A.M.—12 noon.

Withdrawal of guns of defence, partial or complete.

Attacking guns assume everywhere final attack positions.

1st Division clears away light troops, deploys for attack and defence beyond Theale.

Guns bombard slowly and continuously.

2nd Division cuts its way to outskirts of osier and hazel copses and organizes defence.

3rd Division seizes cover east of River Pang, organizes attack, secures both flanks, guns bombarding continuously; bridges the Pang, and makes roadway for guns in meadows; organizes defence near the river against counter-attack.

4th Division attacks Pangbourne, carries it, masks or occupies it with one battalion; remainder organize advance on either side of the Great Western Railway.

Guns south of the Kennet bombard slowly and continuously so as to rake lines of the defence on the hill, with varying elevations.

Enfilading detachment organizes passage at Theale.

12 noon—4 P.M.

3rd and 4th Divisions assault between Sulham and Purley villages; the 4th drives back delay troops of the defence on either side of the railway by 2 P.M., protects its left flank at passages of the Thames. (Two battalions are shown in extended order.) General position of 4th Division at 3.30 P.M. and general positions of the other three divisions between 12 noon and 4 P.M. shown.

1st and 2nd Divisions aid by feints and continuous bombardment. The former at 3.15 P.M. calls up troops from right bank of Kennet and delivers vigorous attack.

Guns cross the Pang at several points in support.

4 P.M.—6.30 P.M.

Lines of defence on the crest are carried between Purley and Sulham villages. Freshest troops, cavalry and horse artillery, pursue and out-flank unbroken Red troops. Field companies, aided by next freshest troops, organize defence of crest line.

The whole of the combatant units everywhere are brought up.

Major E. J. A. BALFOUR: I wish to mention two tactical points which occurred to myself personally during these valuable exercises, because I think that I have, perhaps, given more attention to the subject with which they are connected than most of my brother officers—I refer to the question of cyclists. Colonel Smith mentioned, in the early part of his lecture, that on the first day of the operations a reconnaissance in force of the position was ordered, and that it was necessary before it was actually carried out that some information should be gained of the nature of the outpost line, between what points it extended, and how it was composed. The carrying out of that particular part of the exercise was given to me, and a very interesting problem arose as to how cyclists could best be employed. If I recollect right, the force contained 100 cyclists and one squadron of cavalry, and it occurred to me that the best way of dealing with them would be to employ half the cavalry and all the cyclists in a preliminary reconnaissance to run along the whole line of

outposts: the cavalry having discovered the sentries, the cyclists would dismount behind, attack the piquets in succession, and so force each to deploy. I do not know if that is the best method of dealing with the problem, but I wish to bring it forward as one way, at any rate, in which cyclists could be employed with great advantage. Cavalry alone could not, I think, have done the work as well, but the combination of cavalry and cyclists in that particular country would, in my view, have been very effective. The other point was the use of cyclists in rear-guard actions, and the particular method advocated was this. In an undulating country like that over which we had to retire, between Basingstoke and Reading, the crest of almost every hill was within rifle range of the crest of the next hill. This kind of ground could be used by cyclists in retreat by a body being left, say, at hill A, half being sent back to hill B behind, and the moment the enemy developed such force that those on hill A had to retreat, they would be immediately covered by those already posted on B, they themselves occupying hill C, and so on. But there is another important matter which I am rather anxious to bring before the notice of officers present and the members of the Home District Tactical Society, and it is this: Major Satterthwaite has alluded to the fact that there was a very small proportion of London officers present at Reading, and I think that is to a large extent due to the idea that got abroad that the operations were on such a large scale that junior officers would gain no advantage by attending them. I know that after these operations were carried out, at least one paper repeatedly alluded to the fact that we were running before we could walk, and that, in fact, junior officers were commanding brigades, and so on. It seems to me that those critics entirely forgot that there is an essential difference between training officers to understand the principles on which higher commands are conducted and training officers actually to handle the men whom those higher officers would handle. If there is one lesson more than another taught, as far as I can understand, in the modern training of soldiers, it is that when once an attack is launched, when once the battle really commences, it is impossible for the senior officers to supervise the actions of their juniors. If that is so, and I think that is clearly laid down in our Infantry Drill, the question which junior officers accompanying commanding officers will have to ask themselves is, not so much, What ought I to do? as, What would my commanding officer wish me to do if he were here to teach me? If that is so, it is equally clear he must understand to some extent the broad principles on which his commanding officer would wish him to act; in other words, he must be taught in peace-time to understand the principles on which his commanding officer himself acts. It is impossible to give that training by the actual employment of men, but I venture to think that Colonel Smith has developed a method by which that particular training can be given to junior officers, by which captains, subalterns, majors, colonels, can grasp the broad measures which the higher commanding officers would wish them to carry out in such a way that, if ever it does come to the point, they will be able to take any initiative in their own particular part of any large operations. I hope it has been understood and felt by all junior officers that it is important that they should understand something of the principles of higher command, in order to prevent misunderstandings which must otherwise frequently arise.

Colonel J. WHITTING: As Colonel Smith has incidentally mentioned my name in the course of this lecture, I think it is my duty to rise and make a few remarks. Through the kindness of Major Satterthwaite, I was invited to take part in the manoeuvres; I had heard of the success of the previous year, and was only too glad of the privilege of joining the party, and of seeing what I considered to be a most instructive exercise. I was greatly impressed with the wonderful organization of the Home District Tactical Society, and also with the large number of officers who interested themselves in the combinations of miniature warfare, carried out in such a practical manner as was done at Reading. I cannot speak too highly of the success of the undertaking; it was most systematically carried out, and, besides being a cheerful and pleasant outing, it was also very instructive. But that is mainly due, I consider, to the very great zeal, and energy, and confidence inspired by Colonel Smith, and to the way in which his deputy, Major Satterthwaite, carried out all the details of the expedition. Without entering into the strategical view of the operations, I should like to make a few remarks about the tactical part. The

utility of "outdoor exercises" was brought prominently to notice on the first day, because we were all directed to rendezvous at the eleventh milestone, but that milestone was more evident on the map than on the road. Mistakes arose in consequence; for what was 11 miles from somewhere (Newbury, I believe) was only 6 miles from Reading. With regard to outpost duty, we found on the first day the great importance, and in fact the necessity, of adapting the ground to the number of men with each piquet. In many cases officers were too fond of extending the line and making it go over too large an area. What I also noticed to be a defect was, that the grouping system was too frequently resorted to, and I cannot think that, except in occasional situations, it would be a good thing. It seems to me that an officer commanding a piquet with only 25 or 30 men is likely in such a case to have his men dangerously scattered. With regard to the redoubt which has been alluded to, I felt that I should prefer being in an open work to an enclosed work. An enormous amount of labour and fatigue might have been saved by an open work, and to my unscientific mind it would have been preferable to utilize the bank and fence to form the parapet, instead of undertaking the great additional labour entailed in erecting a fresh parapet on the low ground in front. The attack, I felt, was very well conceived, but I should have been very sorry to have been in the attacking force. I do not think that we should ever have got beyond the river, and we should have been very lucky to have got so far; certainly we should never have crossed it in any order. I should like to have seen more advantage taken, if I had been General, of the high country on the south side of the Kennet. Batteries on those heights would always have flanked the main position. Throughout these exercises I felt that the value of cyclists was fully shown. I am afraid, however, that if officers calculated upon so many cyclists being at a certain point, and the rapidity with which they would move in a case of emergency, we should not have the cyclists forthcoming. At present we have only cyclists enough for carrying out the duties of messengers: I should like to see, even if the Volunteers paid for it, a hundred cyclists to every Volunteer battalion, and then I feel that in this country of narrow lanes and intersected roads they would be found of the utmost service. I must also take exception to the off-hand way in which many officers proposed to put up obstacles and entanglements; all these things take time and fatigue the troops. You are sent on to ground that you have never seen before with a piquet; you are told to look at the ground and examine it; to put out your sentries and arrange where your piquet is to be. Perhaps you have had a long march of 12 or 14 miles or more, and your men are fatigued, and then you have to set to work to see if there is a bit of wire or anything to form an obstacle, or maybe to cut down trees. I think that much longer time than is anticipated would have to be taken before such defensive obstacles could be completed. I do not think that so much could really be done as is generally imagined. I looked on the manœuvres generally as a perfect success. I think that they were most enjoyable and instructive. It all depends on the way in which they are managed, and upon whether you have confidence in those who are directing the operations. If those objects can be satisfactorily attained, and equally good management and good feeling be assured, I strongly recommend that outdoor exercises be frequently practised—without, however, going to the length that Major Satterthwaite assumed just now, with regard to making an examination of them; I would not go so far as that, at present at any rate. But I hope to hear of all ranks of every branch of the Service taking part in such manœuvres in the future, and I do not think the time will be wasted.

Colonel CAVE: Volunteers are constantly told that their place will be to fight in defensive positions; the defensive position is, therefore, a very interesting one to us. At the same time it appears to me that if we are to adopt it with any hope or chance of ultimate success, it must be with the idea that the counter-attack at a certain period of the fight is to be made successful, and that then not only the counter-attacking detail, but the whole force, is to be put in motion, and become, in fact, a pursuing force, converting what was originally the defence of a position into a pursuing action. Waterloo was conducted very much upon this principle. Surely any force assuming defensive tactics ought eventually not only to repulse the enemy, but to be able to convert the action into a pursuing attack; if they

cannot, their defence of the position has not been fully successful. I confess that the impression left on my mind during one day's instruction in the defensive was rather that we remained there to be hammered at, and that all we succeeded in doing was repulsing the attack. I should like to know if that is not an impression that should be avoided in future, and whether, instead of it, we should be looking forward to a general advance after a successful attempt to repulse the foe. Major Satterthwaite brings forward a subject of very great importance, namely, a suggestion that schools should be established by the authorities to which officers can go and learn this kind of work. It is really far more interesting than the humdrum of drill in the barrack-yard. Drill schools have been established, and I think established with great success to the force, but the time has now arrived when the authorities might very well advance further. Certain it is that what officers and Volunteers would learn at such schools would make them take a very much greater interest in their soldiering work, and I am quite sure that, if the authorities would take the matter up and establish such schools, they would do a very great work for the efficiency of the force, and one which would not entail any very great expense. I think, however, that it is very necessary that the Regulations should be altered with regard to what I may call the encouragement that is now given to those who pass in the promotion examinations. There is at present no inducement whatever for a subaltern officer who has passed in the junior tactic examinations to go on to the senior. He earns nothing more for his corps, and beyond a very small distinction in the mark which is put to his name in the Army List, to which I do not attach much value, and to which evidently the officers of the force do not attach much value, there is no encouragement for him to go on. It is not a matter of finance, but it is one in which you might at a very small cost encourage junior and senior officers to go on learning all that they can of military science, and so increase the efficiency of the force. One remark I should like to make with regard to what had been said in the Service paper. I think the whole explanation of these remarks is that the irresponsible gentleman or gentlemen who wrote the paragraphs unfortunately wrote them in Fleet-street. If they would come to the manoeuvres they would find, I think, that the officers who are there are able to learn a good deal, and I believe those gentlemen themselves would not only have seen that officers of Volunteers and others who were present learned a good deal, but that it might be possible to teach even newspaper correspondents something that they do not fully grasp while sitting in Fleet-street.

Colonel ALT: I entirely agree with the last remark made by Colonel Cave as to our would-be critics who sit in Fleet-street, and write of what takes place at these tactical manoeuvres. I was unfortunately absent through sickness from the manoeuvres at Reading, but I have a most lively recollection of the enjoyment and instruction which I obtained in the previous year's outing in the neighbourhood of Leith Hill. The critics entirely misapprehend the purpose of these exercises in stating that we try to run before we can walk, or that they are only calculated to be of benefit to staff officers. I found—and I am quite sure my experience is that of every officer who attended the exercises—that I not only learned a great deal to fit me for what it is my ambition some day to have to do, namely, to command a larger force than a battalion, but it also revived my early experiences, increased my knowledge of minor tactical operations, and helped to enable me to do that which every commanding officer ought to do, viz., to instruct my officers how minor tactical operations should be carried out. I think for critics to speak as they do is the same as for amateurs to pretend to make good actors without having been on the actual stage. It is all very well to learn your part, but you must have been on the stage itself before you can realize what you have to do. That is one lesson which I think officers have learned by these exercises. As a member of the Executive Committee of the Home District Tactical Society, I confirm what Major Satterthwaite said as to our having already taken in hand outdoor exercises for junior officers, and I have no doubt that we shall continue to carry them out, and that will meet one point which has been raised. But whether that is continued or not, there is ample room in the exercises as already organized under Colonel Smith, not only for senior officers, but also for junior officers, to acquire a great deal of information. There is one point I may allude to, though I

have no wish to air one of my own hobbies. Cyclists have been referred to, and I think I am entitled to point out that machine-guns will play an important part in future warfare. I have no doubt that Colonel Smith will bear me out, that in the operations of a rear-guard or detaining force, or for turning defence into pursuit, machine-guns would certainly, in a country like this, where roads are always more or less available, prove most valuable.

Lieut.-Colonel SMITH: I have alluded to it in the lecture.

Colonel ALT: I merely wish to say from my own experience with machine-guns that in our country roads and lanes they would play a most important part. No doubt the cut-up country we have would enable the flanks to be turned; but if you have your men extended to right and left in the open, machine-guns would be of inestimable value in a *defile* or *débouché* from a wood or village or on a road. I think the thanks of this meeting, and of the Tactical Society as well, are due to Colonel Smith, Major Satterthwaite, and the rest of the Staff for organizing these out-door exercises.

The CHAIRMAN: I regret that I have an appointment at the War Office which I am bound to keep, and therefore before Colonel Smith winds up the lecture, I shall be glad to say a few words. First, I heartily concur with Colonel Alt, that our thanks are greatly due to Colonel Smith and the two other officers who have assisted him in bringing forward this matter. Major Satterthwaite, we know, was most active in the arrangements for these tactical exercises. I regretted very much at the time that I was unable by mischance to be present, but I have seen Lord Methuen and several of the other officers who were there, and they all bear the highest testimony to the intelligent way in which the operations were carried out, and to the value of those operations. I am very glad to see that Colonel Whitting has come here to add his testimony to that which we have already heard. Colonel Smith has shown me a letter from an officer of some distinction, and I think, perhaps, I might read it. It is written by Colonel Schwabe. He says: "I am very sorry that inspection duty at Bristol will prevent my having the advantage of hearing your and Major Satterthwaite's paper on the exercises at Reading, to be read on the 30th instant, especially as I was present on one of the days of the exercises. I think officers learn more in one day on the ground than in many days' study of books and maps, which convey very little practical information to a great many minds. The exercises which you directed here for the Bristol Tactical Society on two occasions were greatly appreciated, and those who took part in them assure me that they brought home to them much of their book-learning, which was previously only partially understood and not at all realized. Had I been able to attend the meeting on the 30th, I should have liked to have the opportunity of bearing testimony to the value of tactical exercises as conducted by you." I am sure any member of the Volunteer Force, and any one connected in any way with the Volunteer Service, must naturally be grateful to an officer like Colonel Smith, who has devoted so much time and energy to promoting these tactical exercises on their behalf. He was kind enough to send me a scheme for open-air tactical exercises, supplementing, or altering, in fact, the present tactical examination for what he has already explained as an examination conducted in the field. That paper is now in the War Office, and I can assure him that it will receive consideration. I quite agree with Major Balfour that great value must accrue to junior officers who attend these tactical manœuvres. The junior officer has before him his piquets and his companies, and he can devote himself to an examination of the details, while, perhaps, he may have carefully considered the larger scheme which may be beyond him. We can all see that such an opportunity must be of the greatest value to any officer, however junior his rank. There is one thing which Colonel Whitting said with which I am sorry to say I cannot agree, that is, in certain circumstances: I refer to the use of groups. I found at night, with a very determined enemy in front of me, that small groups of men posted in carefully selected positions and allowed to form their own sentries—the only stipulation being that one man should be awake—produced less scares, and were of greater value than a long line of sentries. The nature of the ground had a great deal to do with it. There are certain small natural defensive posts which four men could hold against small numbers until they were reinforced from the groups on their

right or left, or, perhaps, the piquet in their rear; while in the same position a single sentry would naturally have to fire his piece and fall back on the piquet. Of that I saw practical illustrations in our late operations in the Soudan. I have nothing more to say except this, that, although we have a fair number here to-day, I should have been glad to see more; but I know how difficult it is for officers in the army and Volunteers, who are engaged in various pursuits, to come and attend these lectures. I am glad, however, to think that we shall have the lecture printed, and I am sure it will afford much food for discussion and great stimulus for improvement.

Lieut.-Colonel SMITH: I have not very much to say in the way of reply, because you will observe that most of the remarks that have been made here have been by way rather of endorsing than of rebutting the views that I put forward. I am, for instance, entirely in agreement with what was said by Major Balfour. He expressed, indeed, more fitly than I could have done my own views on the two points he discussed. With regard to the employment of cyclists, from my own recollection of Major Balfour's report on that occasion, I may say that he has correctly described to you the operations carried out, and I think that they would have had the results claimed for them. He proposed to send a small force of cyclists right along the front of the line of piquets, distracting the enemy's attention at nearly every point, and I think the force he displayed would have had the effect of drawing each piquet in succession out of its lair. That was, indeed, the primary object in view—to find out exactly where the piquets lay. Of course, that is only the preliminary part of the work. The larger share of his task still remains to be done, and consists in perforating the line of outposts in order to find out what is going on in the main position behind. Then, with regard to what Major Balfour said as to the training of officers in the command of larger units than naturally pertain to their rank, I should like to add one remark of my own. When you actually come to endeavour to give tactical instruction to such a small unit as (say) a company or half a battery of artillery, you will find it extremely difficult to do so. I am, for instance, rather puzzled if I am asked to give a subaltern officer instruction in the tactical use of a company in the middle of Wimbledon Common. You can only do it by at once inventing the assumption that there are certain other companies present at other points, both on his own side and on the part of the enemy. In order to give any tactical instruction at all you must, in fact, suppose something approaching to the force of a battalion, inclusive of the companies at the disposal of the enemy. When you have done that you will probably arrive at much the same point that I did in these exercises; where there were all the units of a considerable force represented on the ground by their own commanders. It is rather difficult, if not presumptuous, for me to stand between two such very high authorities as Colonel Whitting and Sir Francis Grenfell on the question of grouping sentries, but everyone must admit the overwhelming force of what Sir Francis Grenfell said about the employment of groups in the Soudan. If we had Soudanese savages in front of us we should doubtless much prefer to be members of a group ourselves than to stand in isolated pairs a long way in advance of our piquet. But I do not think that that way of putting it quite exhausts the question. In civilized warfare economy of labour and men is a very important factor, and you would not have French or Germans or Russians endeavouring to steal up, *assegai* in hand, to the double sentry or double vedette in the same way as our enemies did in the Soudan. On the other hand, it does become a matter of some urgency to ensure that the commanding officer of a piquet shall have a sufficient number of men under his immediate command to furnish the first elements of resistance. In spite of what has fallen from the lips of Sir Francis Grenfell, I am inclined to think that group sentries are apt to be a little over-appreciated in our Service. They are useful, perhaps indispensable, in certain places; but I consider myself that the other ought to be the rule, and not the exception. Then with reference to the advanced intrenchment on the left flank, I have already had a little private battle of my own with Colonel Whitting on the subject of that redoubt, and, as is generally the case after discussions of the kind, we ended by adhering to our original opinions. The argument for the use of the redoubt in preference to merely employing the bank as a trench was this: the ground in front of the



defensive position was unseen from some parts of the main line; and it became desirable to throw up an advanced work which would flank the whole front of the line, and this the redoubt did. I think, too, there are cases where a closed work in advance of the line may be more suitable than an open one, especially if you have made up your mind that the garrison is *not* to retire from it. It would be quite fair and reasonable to say to men told off to hold it "You are to remain there and beat the enemy; I shall assist you by sweeping your front and flanks, and I *may* reinforce you. You may die there, but you must not come back." On that theory it is better that they should be with an obstacle, but slight, parapet behind them. You do not want them to get out too easily; they are there, and there they have to remain to the last man. With reference to the park on the south of the Kennet, Colonel Whitting observes that we might possibly have made more of it. I have put a detached battery with its escort in the neighbouring meadows; but probably it might have been better where Colonel Whitting suggests, and to have employed double the force for the purpose. I happen to have a lively recollection of certain unpleasant criticisms at field days and war games on the assumed vice of detaching troops, particularly batteries of artillery, to a distance; and this makes one chary of inculcating, as a matter of instruction, the detachment of troops on ventures of the kind; but, to be strictly honest, I agree that another battery in the park would materially help to rake the whole line, and make the attack decisive; and it is just there that the enormously increased ballistic power of our field guns might make itself felt in future warfare. If the detachment loses both guns and escort, it is still better that they should make the attempt and fail than that the batteries should always be tied down in leading strings to the main body of their own troops. With regard to the cyclists, 100 for each battalion has been recommended by Colonel Whitting, but 24, I think, is the recognized proportion for a Volunteer battalion. I should have thought 24 was a trifle small, and, on the other hand, 100 might prove more than we could reasonably expect or manage. A hundred cyclists take a great deal of room. It is rather awkward working them in columns of route, and I should think some mean between 24 and 100 would be found a more suitable proportion. I am glad that Colonel Whitting has rebuked us for allowing a possibly too free claim for the use of obstacles. I tried to check demands that appeared to me unwarranted at the time, perhaps with insufficient stringency. I accept the criticism gratefully. Colonel Cave pointed out, with regard to the forces we used on the defensive, that if we had won our battle we should have had no strength or reserve of energy left with which to deliver a decisive blow or maintain the pursuit, and I think he is right; but the gist of the problem was this, to hold the ground with the lowest possible quota of numbers. That is, in fact, the only *raison d'être*, in my opinion, for accepting the battle on the defensive at all. You have no right to fight a defensive battle except with the very minimum of troops, and the very fact of your doing so presupposes that the enemy is being attacked in superior force, moral or physical, elsewhere. It matters little, as far as this principle is concerned, whether the decisive attack is delivered on the same field or on some distant but important portion of the hostile army. Undoubtedly, we had *not* enough troops in hand to inflict a decisive defeat, and the utmost we could do was to entice the enemy in between our flanks and the river. If he fell into this trap, something possibly might be effected. The counterstroke that was designed could hardly hope to be decisive, but we might inflict a serious blow. In answer to Colonel Alt, I *did* advocate strongly the use of machine-guns. I think the use of those weapons would economize infantry and every other source of fighting power. I am very grateful to Sir Francis Grenfell for stating that he hopes some practical steps will be taken before long to give us a permanent school of practical tactics. I think that such a school is necessary, not only in the interest of the Volunteer Forces, but also in that of the Regulars. Many officers, from no fault of their own, who have been at some distant station, say Jamaica, have returned home with the painful consciousness that they are "out of" contemporary tactics; and, without exposing themselves to some half-imaginary charge of ineptitude or ignorance, would wish to find some means of refreshing their memories of the latest ideas on the subject. A central school of tactics after the model of Hythe or



Shoeburyness would meet that want. Then, with regard to the Volunteers, I cannot help thinking that a great many officers would fail to find any method of spending a spring or summer's holiday more genial and less costly to themselves than to run down, say, to Aldershot, or some other central spot, for two or possibly for three weeks, and go through a course of this kind.<sup>1</sup> I have now only to thank you for having given such kind attention to my paper.

Major SATTERTHWAIT: Colonel Whitting said he did not agree with me about examinations taking place in outdoor exercises. That was not at all what we intended. We meant to say that the instruction would be all out of doors, and that at the end an examination would be held, a paper examination no doubt. When you go to the school of instruction at Wellington Barracks you are told there is no practical examination in drill, but you are being examined the whole time. The Commandant of the school would form his opinion as to the practical knowledge of the officer all the time, and the written examination at the end would only be a part of the examination. Colonel Cave said that there is not sufficient encouragement given for officers who have passed the junior examination to go up to the senior. I went up for both, and as a matter of fact the paper I got in the senior examination was very much easier than the one I got in the junior. Of course that might have been only the way the paper struck me. With regard to the question of establishment of cyclists, I cannot help thinking that the establishment might be made a little more elastic. I think the way to do that is to have them attached, not to battalions, but to the brigades. When the brigade comes out, as a rule the cyclists, like the machine-guns, would come under the Brigadier-General, and would be taken away to a great extent from the battalions. It is laid down, I believe, in the new book, that the machine-gun is not to be in the battalion, but it is to be attached to the General. I think the cyclists would work very well in that way, especially because in some places you can get cyclists and you cannot in others. In some towns you can get a distinct class of men who will join a cyclist company who would not join the ranks—perhaps a better class of men. I think that if there were a certain amount of elasticity given in the brigades and the whole of the cyclists put under one officer in each brigade, the system would probably work better than it does at the present time.

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<sup>1</sup> I may as well state that I adhere strongly to the view that hasty field defences ought to be studied *concurrently* with field tactics, and that the two subjects should *not* be divorced in any sound curriculum of military instruction.—W. W. M. S.

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## FOREIGN SECTION.

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### THE ITALIAN NAVAL MANŒUVRES OF 1893.

Compiled, by permission, from "L'Italia Militare e Marina," and "La Marine de France," &c., by Commander H. GARBETT, R.N.

THE Italian naval authorities selected as the theme of the manœuvres to be carried out this year the scheme of attack foreshadowed in the remarkable little volume "*Les Guerres Navales de demain*," published in France not long ago, as the one likely to be adopted by a French fleet in the event of hostilities with Italy. The "*Italia Militare e Marina*," in its account of the operations, writes:—

"On Wednesday, the 9th (August), at 6 A.M., the attacking squadron, anchored at Vado, received from the "*Lepanto*" the news that hostilities had commenced. The plan of operations assigned to this squadron, which is commanded by H.R.H. the Duke of Genoa, is identical with the one laid down by the authors of a book which has made a good deal of noise in naval and military circles: we refer to '*Les Guerres Navales de demain*,' in which MM. Commandant Z. and H. Montéchant indicate the rôle which a French fleet would play in the event of a war with Italy.

"The attacking force is stronger than that of the defenders, and its task is to operate against the coast from Ventimiglia to Marsala, to ravage and bombard defenceless towns, destroy the railways, cut the telegraphs, &c., and strive to bring the defending fleet to battle, as the result of which, the victory not being doubtful, it would be able to blockade all that remained of our force in the harbours, and would then complete our defeat by landing a large body of troops on our coast. Very fine, but not without danger, is the rôle of the assailant; that of the defenders is also difficult.

"To cover the enormous extent of coast assigned as the field of operations, to defend it with continual vigilance, and, by movements of exceptional rapidity, to harass the enemy without cessation, to keep touch with him, and at the same time to avoid being drawn into a general action, is an arduous task, which will throw some light on many at present unforeseen difficulties. All the more reason that we should congratulate the authors on the theme, and also the Minister who is striving to test how far it will be possible to frustrate it.

"Convinced partisans for some time past of the new form of naval war, that is to say, of a coast war, we see our ideal to-day placed in practice by the manœuvres.

"We have replied at some length to the authors of '*Les Guerres Navales*,' in order to refute their ideas concerning the ease with which they hope to be able to set foot on our shores in a single day."

*Composition of the Manœuvre Fleet.*

The attacking squadron (supposed to be French), under the command of H.R.H. the Duke of Genoa.

## 1st Division—

Battle-ships: "Lepanto" (flag), "Ruggiero di Loria."

Torpedo-cruiser: "Euridice" and "Monzambano."

Torpilleurs-de-haute-mer: 103, 111, 114, and 131.

## 2nd Division (Rear-Admiral Corsi)—

Battle-ships: "Italia" (flag), "Andréa Doria."

Torpedo-cruiser: "Iride."

Torpilleurs-de-haute-mer: 123, 124, 125, and 126.

## 3rd Division (Rear-Admiral Gonzales)—

Battle-ships: "Dandolo" (flag), "Affondatore."

Torpedo-cruiser: "Goito."

Torpilleurs-de-haute-mer: 57, 62, 115, and 155.

The torpedo-avisos "Aquila," "Sparviero," and the "Tevere," cistern-ship, were also attached to this squadron.

The defending force, under the command of Vice-Admiral Accini:—

## 1st Division—

Battle-ships: "Re Umberto" (flag), "Duilio."

Torpedo-cruiser: "Minerva."

Torpilleurs-de-haute-mer: 59, 65, 72, and 94.

## 2nd Division (Rear-Admiral Puliga)—

Battle-ship: "Castelfidardo" (flag).

Protected cruiser: "Stromboli."

Torpedo-cruiser: "Urania."

Torpilleurs-de-haute-mer: 71, 73, 74, and 137.

## 3rd Division (Rear-Admiral Marra)—

Protected cruisers: "Fieramosca," "Vesuvio."

Torpedo-cruiser: "Aretusa."

Torpilleurs-de-haute-mer: 76, 77, 91, and 139.

The torpedo-avisos "Falco," "Avoltoio," and the cistern-ship "Pagano," were also attached to this squadron. In addition, 24 1st class torpedo-boats were commissioned, to assist in the defence of the various ports. Vice-Admiral Bertelli, who had supreme direction of the operations, hoisted his flag on the transport "Trinacria," which was neutralized; while Admiral Amezaga, who acted as Umpire-in-Chief, was also on board that ship.

King Humbert, with Prince Henry of Prussia, was present during the second part of the manœuvres, on board the Royal yacht "Savoia," as was also Admiral Racchia, the Minister of Marine.

The limits of the manœuvre field were fixed by the coast from Ventimiglia to Campanella, in the south of the Gulf of Naples, then by a line drawn from Campanella to the Trapani Islands, from the

Trapani Islands passing 20 miles south of Sardinia; the fourth line was made by the meridian of Ventimiglia.

These limits comprised all Sardinia: the N.E. coast, including Maddalena, was considered Italian soil; the ports on the west coast served as the base of operations for the attacking squadron under the Duke of Genoa.

The attacking force had the superiority over that of the defence, both in battle-ships and armament, but the defending ships had the advantage in point of speed.

The coefficient of power of each squadron was 56 for the attacking force and 45 for the defending.

The programme of the manœuvres was divided into three phases.

In the first, from the 5th to the 15th August, the attacking squadron had as its object to attempt to force the defending fleet to a decisive action, in order to gain the command of the Tyrrhenian Sea; while the latter, avoiding a battle, was, at the same time, to prevent the enemy from ravaging the coast.

Genoa, Spezzia, and Maddalena were considered so strong that the enemy could make no effective attack against them.

In the second phase of the manœuvres, lasting from the 16th to the 26th August, the offensive squadron had to attack the defending force, which was anchored in an open harbour for the purpose of making good repairs. The defending ships on their side were to attempt to escape and putting to sea to re-form and then take refuge in a better defended port from whence they could continue to harass the enemy.

In the third phase, between the 27th August and 6th September, the hostile squadron had to escort a large convoy of troops, which were destined to be disembarked on the coast of Italy. The convoy at sea was to form a large square, the war-ships forming the angles. The speed was necessarily less than the usual speed of the squadron.

The object of the defending force was to find and attack the squadron at sea, so as to prevent the disembarkation from being effected.

#### *The Operations.—First Phase.*

On the 6th August, Vice-Admiral Bertelli quitted Naples to inspect the positions of the respective squadrons. Squadron A (the attacking) was at Vado; Squadron D (the defending) at Ports San Stefano and Porto Ferrajo. Both squadrons having taken up their stations, hostilities began at 6 A.M. on the 9th August.

Admiral Accini, in command of Squadron D, immediately dispatched his cruisers to scout for the enemy, retaining with himself only the battle-ships and torpedo-boats.

The Duke of Genoa, on his side, sent his cruisers on the same duty, and taking advantage of his superiority in force also directed some of his fast vessels to cut the telegraphic communications between Sardinia and Italy, and to destroy with their guns the railway bridge at St. Vincent di Toscana, while he himself, at the same time, with the main body of his fleet, steamed along the North Coast of

Italy, avoiding the fortress of Genoa, with the intention of destroying the bridges, viaducts, railways, telegraphs, and semaphores which should come under the range of his guns. On the morning of the 10th, at 5 A.M., he was off Monte-Mesco, with his squadron disposed in the following order:—

The 1st Division scouting and ready to repel any possible attack.

The 2nd and 3rd Divisions operating against Levanto and Deiva.

At 6 A.M. the same day, the "Aquila" hove in sight, steaming at full speed and signalling an enemy's squadron of eight ships bearing east; at 7 A.M. the "Monzambano" rejoined and confirmed the report; she had been detached on special service, to land a party of engineers to block the tunnel between the railway bridges of Baffe and Monaglia. Orders were now given for all ships of Squadron A to rejoin, and order of battle was formed in three columns in line abreast, that of the Commander-in-Chief leading, a course being shaped to the south, a little after midday.

The commander of Squadron D signalled by the "Aquila" and "Monzambano" had two objects in view:

1st. To prevent squadron A continuing its ravages along the coast;

2nd. To draw it into the narrow waters between the coast and the Tuscan islands, where a large number of torpedo-boats were stationed; and also to effect these two objects without engaging in a general action. He only succeeded in the first.

The Duke of Genoa, being little desirous of falling by night across an ambuscade of torpedo-boats, contented himself with keeping the hostile squadron at a good distance, while he gained a wide offing, in order that the enemy might lose touch of him, and that he then would be able to continue his operations against the coast the following morning. His cruisers did him good service, the squadron was not disturbed during the night, and on the 11th towards noon the Duke appeared before Civita Vecchia and commenced a bombardment.

Admiral Accini, having lost his touch of the hostile squadron, reassembled his force off Giglio and remained in readiness during the night to move in any direction required; one of his cruisers, the "Minerva," had, during the afternoon, captured the "Eridano," an enemy's transport laden with coal. At daybreak the following morning he dispatched his 3rd Division to scout, steaming with the remainder of his force towards the main land; at 10 A.M. a signal was received from the semaphore on Monte Argentaro, that the enemy was in sight, heading towards the Roman coast, and the Admiral immediately shaped his course with the intention of diverting him from the attack on Civita Vecchia. The three cruisers which formed his 3rd Division were out of sight, so he formed his remaining ships in single column line ahead, himself leading in the "Re Umberto," followed by the "Vesuvio," "Dailio," and "Castelfidardo"; his torpilleurs-de-haute-mer were ahead, and the remaining torpedo-boats were disposed on both flanks of his ships; in this formation, a little after 2 P.M., he arrived within 3,000 m. of the enemy and opened fire. The Duke of Genoa, in the meantime, perceiving that he must temporarily give up the bombardment of Civita Vecchia.

re-formed his own squadron in order of battle, this time in two columns in line ahead; leading in the "Lepanto" with his torpedo-boats in front and on both beams, he steamed full speed towards his opponent, who, having arrived within nearly a mile, and being so much weaker than the enemy's force, now altered course 16 points and steamed away, in order to avoid being considered as destroyed; although a lively cannonade was exchanged between the two fleets, yet the distance was too great for the fire to have been very effective. The "Castelfidardo" had been unable, in consequence of her inferior speed, to keep pace with her consorts, so Admiral Accini signalled for all his torpedo-boats to form round the "Re Umberto," and, when he altered course away from the enemy, he ordered them to attack and drive off the hostile torpedo-boats; he was only just in time, as these latter, sent ahead by the Duke of Genoa, had arrived almost within launching distance of their torpedoes. A brilliant and interesting action now took place between the two mosquito fleets, which ended in the boats of the defending squadron having to turn and fall back on their own ships, as the quick-firing guns of the attacking fleet would speedily have put them out of action. The diversion caused, however, was sufficient to enable Admiral Accini to draw out of danger, as his ships had the superiority of speed; the Duke of Genoa having now secured the command of the coast again, although he continued to follow the defending fleet, detached the "Affondatore" and "Dandolo" to renew the bombardment of Civita Vecchia (according to the rules laid down, a bombardment to be counted effectual must last six hours). In the course of the afternoon, Admiral Bertelli directed from the "Trinacria" a cessation of hostilities, and both fleets accordingly withdrew to their respective stations, the Duke of Genoa to Sardinia, and Admiral Accini to Naples, as if to repair damages and take in stores; both Commanders, however, keeping a watch on the other by means of their cruisers and torpedo-boats.

On August 13 Admiral Accini recalled his look-out ships, with a view of concentrating his force for the defence of Gaeta and Naples; on the evening of the 14th the semaphores reported the presence of the enemy in the offing. The night was very dark and there was some fog, which favoured the attacking force, and the defending fleet had been caught under circumstances which, according to the rules, entailed its defeat. When the enemy was signalled to Admiral Accini, it was too late for him to weigh and put to sea from the Bay of Naples, where he was anchored, as the enemy was already off the entrance. The action began at daylight, when Admiral Accini launched his 34 torpedo-boats *en masse* against the advancing ships, at the same time weighing with his battle-ships; the torpedo-boats were encountered by the 14 boats of the hostile fleet, but, in the *mêlée* which ensued, the Duke bore straight down upon the "Lepanto," and, bringing his whole force to bear upon the defenders at less than a mile range, the victory was his in accordance with the rules.

How far it would have been so in actual war, it is impossible to say; Admiral Accini's torpedo-boats out-numbered those of the attacking force more than two to one, and it is a question which



may be discussed indefinitely, whether under those circumstances more value ought not to have been laid upon their attack, in so far as placing some of the attacking ships *hors de combat*. This final battle brought the first part of the operations to a close.

#### *Second Phase.*

In the second series of manœuvres, the defending squadron under Admiral Accini, after having been brought to action by the enemy, was forced to take refuge in the harbour of Gaeta, where it was enabled to make good repairs, re-coal, &c.; it was here and under these circumstances to be again attacked, and, if possible, make good its escape to sea, and reach some more strongly fortified harbour.

On the morning of the 22nd August the situation was this. An immense boom closed the roadstead of Gaeta, leaving only two small channels. The first of these passages was commanded by the battery of Santa Maria, the second, close to Vendice, by a battery of six siege guns; other batteries protected the interior in rear of the boom, where the battle-ships and cruisers of the defending squadron were lying, as well as the torpedo-boats, which were destined to prevent the entrance of an enemy; the harbour was further protected by lines of submarine mines; all along the coast, as far as Formies, sentinels, 60 yards apart, were stationed, supported by large bodies of troops in reserve. To Admiral Accini was confided the supreme command, and all the resources of the fortress, both of men and matériel, were at his disposal. Besides the fortifications, notably Forts Conca and Monte-Orlando, several field batteries were ready to move at once on any point specially threatened.

At 3 P.M. the King, accompanied by Prince Henry of Prussia and the Prince of Naples, arrived on board the Royal yacht "Savoia." It was known that the attack would be made that night, and while the "Aretusa" and "Minerva" were sent to scout in the offing, the rest of the squadron lay with steam up ready to put to sea. As night fell, the torpedo-flotilla took up its position outside the boom, ready to attack the enemy as soon as he appeared; by means of the electric search-lights, the channels were lit up as if by the light of day. At 9 P.M. Admiral Accini gave the order to weigh, and at that moment the approach of the enemy's squadron was signalled; at 10 P.M. the hostile ships were in full view, and engaged with the defending cruisers, which were forced to take shelter inside, while some of the enemy's ships made an attempt to destroy the boom, but they were thus brought under the fire of the forts, which immediately opened upon them, and a lively cannonade was now kept up on both sides. At 11 the enemy, preceded by his torpedo-boats, attempted to force the south pass into the harbour, but he was attacked by the torpedo-boats of the defence and his advance checked; while the struggle off the south entrance was still continuing, the lights were all simultaneously turned off, and in the sudden darkness which ensued the "Re Umberto" and the "Stromboli" steamed out by the north channel and made their escape into the offing; about 11.20, the torpedo-boats of the defence having forced the attacking ships to fall back, the

"Duilio," "Fieramosca," and "Castelfidardo," which were still at their anchorage, slipped their cables, and there being no moon, they successfully steamed out through the southern pass and rejoined their consorts at the appointed rendezvous, without being intercepted. The second phase of the manœuvre thus terminated in favour of the defending force. In the morning both squadrons returned to the anchorage of Gaeta, where 27 battle-ships and cruisers and 50 torpilleurs-de-haute-mer now lay.

### *Third Phase.*

For this portion of the manœuvres, which consisted of the convoying of transports from Sardinia, and the disembarkation of the troops at some point on the Italian coast, a modification was made in the composition of the two squadrons. The "Re Umberto," with the cruisers "Stromboli," "Aretusa," "Minerva," the torpedo-avisos "Nibbio" and "Avoltoio," and 22 torpedo-boats, formed the new Squadron D, under the command of Admiral Accini, and took up their station at Spezzia.

The Duke of Genoa had with him at Maddalena, for Squadron A, the battle-ships "Italia," "Lauria," "Dandolo," "Duilio," "Doria," "Lepanto," "Castelfidardo," and "Affondatore"; the cruisers "Vesuvio," "Monzambano," "Euridice," "Iride," and "Urania," the torpedo-avisos "Aquila" and "Sparviero," 26 torpedo-boats, and four vessels without fighting value, to mark the four angles of the area supposed to be occupied by the transports.

On August 28th the Duke of Genoa assembled his captains and explained his plan of attack. As soon as hostilities opened, the three cruisers "Euridice," "Iride," and "Urania," with the "Aquila" and "Sparviero" and four torpedo-boats, were to proceed to sea at full speed and explore the coasts of Elba and the Piombino Channel, on the one hand, and the roadstead of Gaeta and the Gulf of Naples on the other.

The ships charged with the defence of the convoy were distributed in three divisions as follows: 1st division—"Italia," "Lauria"; 2nd division—"Dandolo" and "Duilio"; 3rd division—"Doria" and "Fieramosca"; to each of these divisions was attached a small flotilla of torpedo-boats. These three divisions were to examine different parts of the coast to find a place suitable for the disembarkation of the troops.

The "Lepanto" and another flotilla remained under the immediate orders of the Admiral; while the "Castelfidardo," "Affondatore," "Vesuvio," and "Monzambano" were stationed at the corners of the square, the length of the sides of which was about  $2\frac{3}{4}$  miles, which represented the space occupied by the transports. The front of the square was defended by the three torpedo flotillas, and the other sides each by one of the ships of the three divisions to which the torpedo-boats belonged. The definite choice of the place for disembarkation was reserved until the last moment.

While the Duke of Genoa was making all his dispositions, the defending force did not remain idle. Admiral Accini had directed

his cruisers to gain touch with the enemy, and he then intended to force his ships, if possible, into the midst of the transports, and as a last resource to use all the means at his disposal to oppose the disembarkation. The coasts of Rome and Tuscany and the Neapolitan littoral were considered as the most likely where the hostile commander would attempt to effect his object.

Hostilities were resumed on the 1st September, when the Duke of Genoa's cruisers left Maddalena at daylight to scout as previously arranged. At 6 P.M. the rest of the squadron and convoy put to sea, and, steaming at a speed of 6 knots, arrived off Monte-Cristo at daybreak on the 2nd. Here the Duke learnt from his scouts that the defending force was watching the coast further to the north, evidently expecting that the attack would be made from that quarter, especially as some skirmishing had already taken place between the light vessels of both forces.

At this news, the Duke decided to attempt the disembarkation at Volturmo, between Gaeta and Naples, and signalled to this effect to Admiral Bertelli and the Umpire-in-Chief, on board the "Trinacria"; he then shaped his course accordingly, and, favoured by splendid weather, on the morning of September 3 he commenced the disembarkation, which was carried on for six hours uninterruptedly without a ship of the defending force being sighted.

It was a success for the attacking commander, which could hardly, however, have been depended upon in actual war. There is no doubt that Admiral Accini's arrangements completely broke down, but in war it is most improbable that a large fleet of transports could have been successfully convoyed within striking distance of an enemy well provided with cruisers and torpedo-boats. Under the circumstances it is difficult to explain Admiral Accini's apparent inaction and feebleness in handling the ships at his disposal.

The "Italia Militare e Marina" considers that the choice of Maddalena as the point of departure of the attacking squadron has a double signification. It shows, in the first place, that a hostile fleet which wished to operate against the Italian coasts must first gain possession of Maddalena; and it also proves that so long as Maddalena is in the hands of the Italian fleet no convoy of hostile troops would venture on attempting a disembarkation on the Italian coast, on account of the risk of being caught between Spezzia and Maddalena.

The Maddalena group (Maddalena, Caprera, San Stefano) offers a large and secure anchorage to ships. The entrance to the estuary, although easy in time of peace, can be effectually closed to an enemy in war, as the groups of islands lend themselves marvellously for purposes of defence, while the numerous semaphores and look-out stations established on every point allow of the movements of vessels being followed both by day and night. The anchorage of Maddalena is now defended by numerous powerful forts, armed with heavy modern guns.

Admiral Amezaga, who followed the manœuvres as Umpire, has published the following remarks: "The Naval Manœuvres," he says,

"have, to a certain extent, tested our mobilization system, as, for the first time, a large number of ships has been suddenly commissioned, and a certain number of Reservists has been called out. The experiment has been on the whole successful, as the Reservists, with few exceptions, arrived within the prescribed time, and the ships, although not commissioned until the 15th July, were all ready to take part in the operations by the 1st August. On the other hand, several of the officers in the Reserve called upon failed to appear, alleging for the most part ill-health. This is not to be wondered at, as it is not possible to make men enthusiastic who have had their legitimate aspirations in their career brought to a premature close by a limit of age.

"If there had been a general call upon the officers of the Reserve, there would have probably been better results; and, in any case, some indications would have been given of the value of a body in which the country ought to have full confidence, not only in war-time, but at any time when exceptional armaments might render a call upon them necessary.

"There has been no breakdown in the fleet to report, although it consisted of 18 squadron ships, 4 torpedo-avisos, and 54 torpilleurs-de-haute-mer; and was manœuvring night and day for a month. The 'Duilio,' 'Lepanto,' and 'Re Umberto,' the best specimens of our modern naval architecture, completely came up to the expectations formed of them, and the object for which they were built.

"As in foreign navies, so it is with our battle-ships, whose radius of action has been much curtailed, owing to the necessity of so frequently coaling. A long-convinced partisan of the substitution of hydrocarbons for coal, I am happy to see that under the administration of Admiral Racchia steps have been taken to test their value. All our 1st class ships have on board a considerable store of naphthalin—the residue of distilled petroleum—which is burnt conjointly with coal. We have at this moment several torpedo-boats which have been fitted to use naphthalin exclusively, and this number is being increased.

"The hydrocarbons have an immense future before them in war navies, in consequence of their caloric power, the ease with which they can be stowed and put on board, the simplicity of their combustion, their cheapness, and the diminution in the number of men where they are in use."

The Admiral then comments on the three phases of the manœuvres, lays stress on the necessity of often repeating such operations, and remarks that it must not be forgotten in all these problems that the maritime defence of the peninsula is closely bound up with the land defence of the coast and of the interior of the country.

The following account of some interesting torpedo exercises which have been carried out at Maddalena has been taken from the "Rivista Marittima," and contributed by Staff Engineer T. J. HADDY, R.N.

The plan of operations was as follows: the two battle-ships "Italia" and "Andréa Doria" were anchored in the inner harbour at Maddalena

for the purpose of replenishing or making good minor repairs at Porto-Camicia; a fleet of light ships, composed of the torpedo-cruiser "Iride," the aviso "Rapido," and eight sea-going torpedo-boats, was charged with an attack by surprise against the two anchored ships. For the three days allowed for the operations the works on shore were put on a complete war footing, all the defending batteries being armed, especially those destined to defend the points of access to the harbour; the movable defence, consisting of torpedo-boats, torpedo-launches, tugs, and smaller boats, was distributed as convenient in order to command the external approaches and the passages and channels of access, and also to explore the stretches of water inside the archipelago. All the semaphores and look-out stations were put on a war footing, and all the regulations for signals of alarm and distress, &c., were duly established. The two ships "Italia" and "Andréa Doria" were kept ready for action from daylight till dark, and their boats away on duty patrolling in their vicinity; in addition to this the ships were disposed so that the "Italia" could sweep the southern entrance of Porto-Camicia between San Stefano and Chiesa with her electric lights and secondary armament, and the "Andréa Doria" could perform the same service for the northern passage between San Stefano and Chiesa; two obstructions for torpedo-boats, which would consist of torpedo-nets and other obstacles, were also represented by launches, one completely closing the pass between San Stefano and the island of Chiesa, and another to the southward between Punta Fico di Caprera and the south point of San Stefano, so that there only remained a small passage free for the transit of the vessels composing the movable defence. The obstructions were supported by light artillery on shore; the Moneta Pass was considered inaccessible, as it is in reality. The attacking fleet was posted in the Aranci Gulf, and as soon as hostilities commenced was left with full liberty of action. The operations commenced on the night of 24th May; at dusk a torpedo-boat landed an officer and a small party of men unobserved at a deserted point near Capo Ferro; the party captured the signal station by surprise at nightfall, and managed to transmit false signals to various posts of the land defence, but, except some false alarms given to the defence of the northern passages, the attack derived no benefit from this success, as it was soon discovered that the station at Capo Ferro had fallen into the hands of the enemy, and no further notice was taken of the signals. Towards 2 in the morning, that is before daylight and after the moon had set, the principal attack took place; the two ships "Rapido" and "Iride," each at the head of a squad of four torpedo-boats, directed operations against the eastern passage of the archipelago; the "Rapido" conducted her torpedo-boats to the attack, coasting along from the north of the island of Caprera; the "Iride," on the other hand, directed the attack with her torpedo-boats from the open upon Capo Ferro, both ships manœuvring so as to attract the attention of the land forces to themselves, and so favour the attack of the torpedo-boats, and, in fact, both ships were promptly discovered by the efficient look-out service which had been organized,

were illuminated by the electric search lights, and put out of action at once by the batteries. The eight torpedo-boats rushed to the attack on their own account, each manœuvring so as to traverse the passes in the manner least likely to lead to their being discovered and put out of action, but the difficulties were numerous, both from the hydrographical conditions of the passes and from the vigilance of the defence, so that five torpedo-boats were discovered by the projectors and put out of action. Three of the boats appear to have succeeded in forcing the passages, but only one of them completely unobserved; the other two were illuminated and fired on, although only for a very few moments, and their commanders were able to assert in the confusion that they were not effectively discovered and put out of action, and consequently continued the action inside the harbour. The torpedo-boat which had succeeded in entering unobserved steered at once straight for the ships at anchor, and perceiving a large sector not illuminated between the rays of the "Italia's" projectors, and keeping in this tract, she managed to get within striking distance, and launch two torpedoes. But the dark sector exactly covered the zone guarded by the obstruction, so that the torpedo-boat would have been stopped by this defence, and the attack was consequently considered to have failed. The other two boats were manœuvred in a similar manner, and managed to get more or less within launching distance; they were, however, discovered earlier inside Porto-Camicia, and so, like the first, were considered to have been stopped by the obstructions. The vigilance of the exploring and signalling staff of the defence was irreproachable, and the arrangements worked admirably.

We may make a few observations on the operations thus briefly described, which confirm opinions already known and discussed. Ships should resolutely avoid passing the night at anchor in positions exposed to the attack of torpedo-boats if they have not the means to provide special and efficient systems of obstruction; also, in fortified positions which can only be considered inaccessible to the enemy's ships, obstructions for torpedo-boats are absolutely indispensable, and it will be the best thing to provide them for all passages, bearing in mind that it is better to bar the exterior passages completely rather than the inside channel of access. When the approaches are in this way so closed that only narrow stretches of water remain open, which are more or less permanently illuminated by the electric light projectors and covered by the artillery, the field of fire being constant and localized, there will be very great certainty that no torpedo-boat will be able to penetrate the defences. For the land defences, no dependence can be placed on the projectors unless they are so placed as to permanently illuminate well-defined spaces; the batteries of light guns should be situated at a distance from the projectors so as not to be embarrassed by them, and each one directed to cover with its fire a given illuminated zone and nothing more; the enemy should not be searched for by moving the projectors, the batteries of quick-firing guns should open fire on anything floating which attempted to pass the respective illuminated zones.



In this way the internal service of patrol can be suppressed or very greatly simplified; this service is very difficult to make effective and is likely to give rise to serious inconveniences in the darkness and inevitable confusion of an attack. The movable defence will be most usefully employed exclusively in the service of first discovery of the enemy, and need not come into harbour, unless by day, but will maintain communication by signal with the advanced look-out stations; on occasion, a counter-attack against the approaching enemy might be attempted, obliging him to delay or modify his attack, or to give it up altogether. If all the problems of the internal reconnoitring and signalling are suppressed, the exterior guard would be much more simple and efficient, and it would be certain that any floating object discovered by the ships inside the limits would be an enemy. In connection with this subject it may be observed that at the moment of the attack above described, and just at the time when the passes were being forced by the enemy, the "Iride" opened fire on two of her own torpedo-boats which were thought to belong to the enemy, and would most certainly have sunk them; besides this, one could never be certain that the defending batteries would not mistake one of their own torpedo-boats for one of the enemy's. The anchored ships should be kept ready with their light guns without using their electric light projectors, as the latter, besides revealing the exact position of the ship to any torpedo-boat which might have succeeded in penetrating inside the defences, are more injurious than useful, either for discovering or battering the enemy. It is not possible to follow the movements of a torpedo-boat effectively by moving the projectors, and it is impossible to open fire on her with any certainty of hitting her; it is, therefore, much better to keep a good look-out and open fire without the projectors. It is certain that a torpedo-boat which has succeeded in entering would have a good chance by charging blindly right against the ships, even at the risk of running ashore; the projectors of the ships would frequently render her final course more certain and secure if they were used. We may reason in the same way on the employment of the projectors by squadrons or single ships in the open sea when fearing attack by torpedo-boats; and the fact is indisputable that the electric light at the commencement will render the best service to the torpedo-boats by indicating to them the position of their enemy; and for the rest the boats will provide for a good result if they are fast, sufficient in number, and ably and boldly directed. The projectors, useful for the defence of passes and approaches, may also serve for the first discovery of the enemy, for dazzling him and rendering navigation, from a hydrographical point of view, most difficult, and also on board ships for signalling at a distance; they should, however, be employed with prudence for the latter service. With regard to the obstructions, if it is possible to construct them, the best will consist of dykes and shoals, leaving very few and narrow channels, as, whatever fittings, instruments, and gear may be invented for the purpose, the best and most infallible means for stopping a torpedo-boat will be an insufficient depth of water.



## THE NEW GERMAN ARMY BILL.

By the terms of this Bill the German army on a peace footing will, from the 1st October, 1893, until the 31st March, 1899, have an average strength of 479,229 men, exclusive of one-year volunteers, non-commissioned officers, officers, medical officers, and military officials. Of one-year volunteers there are at present annually some 9,000 men, while the numbers of the officers, medical officers, military officials, and non-commissioned officers are determined each year, and included in the Budget.

The following will be newly raised:—

*Infantry.*—For each of the 173 regiments of the Guards and line a 4th (half) battalion of 2 companies.

*Field Artillery.*—20 brigade division staffs; 60 field batteries formed into 20 brigade divisions; 1 brigade division staff and a brigade division of 3 batteries for the Field Artillery School of Gunnery.

*Foot Artillery.*—2 inspectional staffs; 3 regimental staffs; 6 battalions and 1 company; 1 battalion staff and 1 company for the Foot Artillery School of Gunnery.

*Pioneers.*—3 commanders of the pioneers of the 1st, XVth, and XVIth Army Corps; 3 battalions and 2 companies.

*Railway Troops.*—1 regimental staff; 2 battalion staffs; 9 companies.

*Train.*—1 company.

Including these new formations the German army will in future consist of—

538 battalions and 173 half-battalions of infantry.

465 squadrons of cavalry.

494 batteries of field and horse artillery.<sup>1</sup>

37 battalions of foot artillery.

23 battalions of pioneers.

7 battalions of railway troops.

21 battalions of train troops.

These are formed, in peace-time, into 20 Army Corps, each of 2 divisions, with the exception of 4 corps, in each of which there are 3 divisions.

Hitherto the conditions of service have been for all arms 7 years in the standing army (of which 3 years' uninterrupted colour service and 4 years in the Reserve of the standing army), 5 years in the 1st Ban of the Landwehr, and 6 years in the 2nd Ban of the Landwehr.

The period of uninterrupted colour service is for the future to be for cavalry and horse artillery 3 years, and for all other arms 2 years, after which the men will be passed to the Reserve for 4 and 5 years,

<sup>1</sup> Exclusive of 6 field batteries at the Field Artillery School of Gunnery.

respectively. In case, however, it should at any time become necessary to reinforce the existing establishment, the Emperor can order that the men, who would be otherwise dismissed to the Reserve, should be retained with the colours. The retention of the men in this manner will be counted as training, men while in the Reserve being liable to be called up for two trainings not exceeding 5 weeks each during their period of Reserve service.

The men of the cavalry and horse artillery who have had 3 years' colour service in the standing army have only to serve for 3 years in the 1st Ban of the Landwehr instead of 5 as formerly.

By the reduction of the period of colour service to 2 years it will now be possible, in the same period of time, to pass half as many men again to the Reserve as could be passed with the 3 years' service. Thus, supposing the peace strength to be taken at 600,000 men, there would be required, under the 3 years' system, not making any allowance for losses, an annual contingent of 200,000 men, and each contingent of 200,000 men would, on completion of 3 years' service, be passed to the Reserve. With the same peace strength and a 2 years' service, an annual contingent of 300,000 would be required, and this number would go to the Reserve each year on completion of their 2 years' service.

*4th (Half) Battalions.*—Undoubtedly, the most important item in the Bill is the creation of the new 4th (half) battalions which will relieve the other three battalions of a regiment of a great number of somewhat irksome duties in time of peace and, on the outbreak of war, will greatly facilitate the process of mobilization and will enable the first three battalions to take the field at once and intact.

These fourth half-battalions, consisting of two companies of together 193 non-commissioned officers and men, have been created with a view of undertaking the following duties:—

1st. They will be given entire charge of the training of the "Nachersatz," which is a sort of supplementary contingent of recruits, raised with a view of replacing all casualties in the ranks of the field battalions caused by death, sickness, incapacity, desertion, &c. This contingent, which will join at the same time as the ordinary recruit contingent, will be instructed on precisely similar lines to the latter, so that, on a vacancy occurring in a company of one of the field battalions, it may be at once made good by a man trained to exactly the same extent as the remainder of the company.

2nd. The training and instruction of such one-year volunteers as join their regiments on the 1st April instead of on the 1st October, which is the date at which the ordinary recruits join.

3rd. The training of the schoolmasters and candidates for the post of schoolmaster. These have only a 10 weeks' training, and are then transferred to the Reserve, in which they again have two further trainings.

4th. Taking over a great portion of such duties as would otherwise take the men of the field battalions away from their ordinary training with the regiment, and training of the men of the "Beurlaubten-

stand." The duties taken over include the furnishing of detachments away from headquarters, guard duties, fatigue parties (excepting for purely regimental purposes), and the necessary guards, &c., in garrison while the field battalions are attending the manoeuvres. The "Beurlaubtenstand" includes, amongst others, the Reserve and the Landwehr. The men of the Reserve, as explained before, are subject to two trainings not exceeding 8 weeks each, while those of the 1st Ban of the Landwehr are also liable to two trainings of from 8 to 14 days.

It will be seen that, with the above duties taken over by the 4th battalion, the three field battalions are enabled to devote the whole of their energies to their natural object, viz., the training of the men for war. The commanding officer will always have all his force actually present on parade, whereby both its and his efficiency must be greatly increased.

In time of war the value of the 4th battalion as a *dépôt* is very great. Its duty will then consist in the formation and instruction of all new formations, as well as of all reserve formations. To these the 4th battalions will give up certain officers and non-commissioned officers to form the cadres of the new units.

Hitherto, on the outbreak of war, the battalions about to take the field were depleted by having to give up officers and non-commissioned officers to form cadres for fresh units and to create the *dépôt* for the instruction, &c., of the men called up. This will be the case no longer, and it is principally with reference to their employment in this manner that the 4th battalions have been created.

*Field Artillery.*—In the matter of field artillery the Germans were considerably inferior in comparison with the French, and, moreover, several of their Army Corps were still without their due proportion of artillery as reckoned by the typical Army Corps. The normal Army Corps has 23 batteries, of which 21 are field and 2 horse. These are grouped into brigade divisions of 3 batteries in the field artillery and of 2 batteries in the horse. Four brigade divisions form a regiment, of which latter there are 2 in the field artillery brigade of an Army Corps. One of the regiments has 4 brigade divisions of field artillery, the other 3 of field and 1 of horse. By the present increase of 63 field batteries the Germans have now acquired a slight numerical superiority over the French, whilst, with very slight exceptions, the field artillery brigades of an Army Corps are now all of the above-mentioned normal type.

In addition to the numerical superiority of France over Germany in the matter of field artillery, which was given as a reason for the demand for the 63 new batteries, it was also urged, as a further argument in favour of this increase, that it was no longer safe, without detriment to the artillery arm, to be without batteries which could be utilized as cadres for reserve formations on the outbreak of war. The rôle of the 4th brigade division of a field artillery regiment will, on the outbreak of war, correspond exactly to that of the 4th battalion of an infantry regiment, thus having a most important place in the formation of the reserve divisions.

According to the new distribution, five Army Corps, the 1st, IIIrd, Vth, XVIIth, and XIIIth, have each two 4th brigade divisions, and it will be noticed that of these the 1st, Vth, and XVIIth Corps are all on the immediate frontier of Russia, while the IIIrd lies directly in their rear. The other Army Corps have each only one 4th brigade division, with the exception of the Guards and XVth, which have none.

*Foot Artillery and Pioneers.*—The increases in the foot artillery and pioneers were made on the grounds that they are technical troops, and as such require considerable training. They could not be improved on the outbreak of war, and must, therefore, be raised in peace-time.

*Railway Troops.*—A considerable increase has been made in the railway troops, the reasons given for which are as follows:—The greater the number of troops in the field, the more important becomes the question of ensuring the safety of the lines of communication. The power of increasing the numbers of the train troops must, however, soon reach its limit, and it will, therefore, become more and more imperative to have command over existing railways, and to construct field railways. In connection with this subject, it may be mentioned that in the Budget for the present year there was included a sum of 150,000*l.* for the provision of field railway material.

*Increase of the Peace Establishment of Units.*—Before proceeding to state the effect of the new Bill upon the question of recruiting, it may be well to mention certain other increases which had been asked for in the original Bill.

*Infantry of the Line.*—The most important of these was, perhaps, the proposed raising of the establishments of a large proportion of the infantry.

The Prussian infantry of the line has hitherto had three establishments, the lower of 560 men, the medium of 600 men, and the higher, or increased, of 660 men per battalion, these figures being varied slightly in Saxony, Württemberg, and Bavaria. Battalions on the higher establishment have 22 officers, the others 18. Of the whole German army there were 99 battalions on the increased establishment, all being either in the Guard Corps, or in the XIVth, XVth, and XVIth Corps, which last are situated immediately on the French frontier. On the medium establishment there were only 42 battalions, all belonging to the 1st or XVIIth Army Corps, stationed on the Russian frontier. The remaining 378 battalions were on the lower establishment.

In the original Bill it was proposed to raise the 42 battalions on the Russian frontier from medium to higher establishment, and 21 other battalions from the lower to the higher, as well as to bring the whole of the remaining 357 on to the medium establishment. This, however, was not agreed to in its entirety, the increases to the higher establishment having been refused. Practically, there will now be only two establishments, the higher and the lower. The 99 battalions which were on the higher establishment retain their original numbers of 22 officers and 660 men; the remaining 420 battalions will have 18 officers and a strength in men varying from 580 to 620.

As regards the rifle battalions, of which there are 19 in all, the establishments have been considerably increased, although still somewhat lower than those originally asked for. All rifle battalions have 22 officers; those on the higher establishment will, in future, have from 650 to 678 men, those on the lower, 614 men.

It will be observed that the peace establishments given above are far in excess of those of other Continental nations. Another great advantage lies in the fact that, owing to the 4th (half) battalions, which act as a species of regulator, the strength of the battalion remains the same at all periods of the year.

*Cavalry Cadre Squadrons.*—Turning now to the cavalry arm, it is much to be regretted, from the point of view of the German Army, that the Reserve cadres consisting of 9 squadrons, each of 3 officers, 11 N.C.O.'s, 35 men, and 50 horses, were not granted. These cadre squadrons were introduced as an experiment, with a view of passing in a short time a large number of horses through the ranks into the Reserve, and of thus being enabled to speedily raise fresh regiments on the outbreak of war.

The principle on which the cadre squadrons were to have been worked was the following. Each half year each squadron was to receive and train 50 horses. At the expiration of the six months, these horses were to be handed over to private persons for their own purposes, but they were always to be forthcoming when called for. For seven years, from the date of handing over, those horses would belong to the State, after which they would become the absolute property of the person using them. It was calculated by this means that there would be available, allowing for losses, some 6,300 horses at the expiration of seven years. These would suffice to form the eight new regiments which it is calculated at the present time would be required to cope with the large masses of cavalry possessed by Russia.

*Field Artillery.*—In the matter of field artillery, the 63 new batteries were all, in the original Bill, calculated as being on the medium establishment, that is to say, all the six guns of a battery would be horsed. In the new Bill, however, only nine of the new batteries have the medium establishment, the remainder being on the lower establishment, and thus having only four of the six guns horsed.

Germany will now have, in all, 494 batteries,<sup>1</sup> of which 47 are horse, the remainder field.

With regard to recruiting, there will be required annually an increase of some 54,000 men over and above the former contingent, but it is anticipated that there will be no difficulty in obtaining them. The annual recruit contingent per unit will be, roughly speaking, half the strength of the unit, with an addition of 5 per cent. (in exceptional cases of 6 per cent.), to allow for casualties.

*Increase of the Peace Strength of the Army.*—As regards actual numbers, the new Bill has wrought a very considerable change. Hitherto the total budgetary peace strength was 486,983 non-com-

<sup>1</sup> Exclusive of six field batteries at the Field Artillery School of Gunnery.

missioned officers and men. The *average* strength is for the future to be 479,229, but this is exclusive of non-commissioned officers, of whom there will be 77,864, as against 66,952 for the current year. The number of officers has also been raised from 20,662 to 22,455, and there are corresponding increases among the medical officers, paymasters, armourers, and veterinary surgeons.

The following figures give the actual numbers of the German Army under the provisions of the New Army Bill:—

Men.....	479,229
N.C.O's.....	77,864
Officers.....	22,455
One-year volunteers (say).....	9,000
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Total combatants....	588,548
Medical officers.....	2,068
Paymasters.....	1,102
Veterinary surgeons.....	578
Armourers, saddlers, &c.....	1,153
<hr/>	
	593,449

or an increase of some 73,000 over the former figures.

Roughly speaking, Germany will now have, at all times of the year, an army some 600,000 strong, including all ranks.

As regards horses, she maintains in peace 96,844 troop horses, which, with the officers' horses, those of one-year volunteers (who mount themselves), and the krümper<sup>1</sup> horses, make up a grand total of some 120,000.

The above short account will give some idea of the great value to Germany of the passing of the Army Bill, a value which will become more and more appreciable as years pass, and it has had more time for its operation to become effective. (100.)

<sup>1</sup> Krümper horses are selected from the best of the horses cast each year, and are borne in addition to the effective establishment to the extent of four per squadron or battery and five per train company. No rations are allowed for these horses, and they are fed on the savings from the other rations.

## NAVAL AND MILITARY NOTES.

### NAVAL.

**Home.**—The 1st class battle-ship "Ramillies" has been commissioned by Captain F. B. Simpson as the flag-ship of Admiral Sir M. Seymour in the Mediterranean; she will be the most powerful battle-ship out there, and therefore a most welcome addition to the strength of our squadron, especially in view of the formidable fleet which the French Government now keeps in commission and ready for immediate service in those waters. On her arrival on the station the "Inflexible" returns to England, and will take the place of the "Nelson" as flag-ship at Portsmouth.

The 1st class battle-ship "Howe" has also been commissioned by Captain Atkinson for service in the Mediterranean. She will, however, according to present arrangements, be temporarily attached to the Channel until the "Resolution" is ready for commissioning. The manner in which the extensive repairs to this ship's bottom and her general refit have been completed in less than four months from her arrival in England reflects the greatest credit on the Chatham Dockyard authorities. She will eventually relieve the "Edinburgh," which ship on returning to England will take the place of the "Audacious" as the 1st Reserve ship at Hull.

The 1st class battle-ship "Anson" has left for the Mediterranean, relieving the "Colossus" at Gibraltar, which ship on arrival in England will be paid off, and will then take the place of the "Neptune" as 1st Reserve ship at Holyhead.

The 1st class battle-ship "Centurion," laid down in March, 1891, successfully underwent her eight hours' natural-draught trial on the 19th September. She is of 10,500 tons displacement, and forms, with her sister ship the "Bardfeur," a distinct type of battle-ship. Their bottoms are sheathed, and their, comparatively speaking, light draught of 25½ ft. will enable them to pass easily through the Suez Canal, with a large quantity of coal on board and in other respects fully laden. Her trim on trial was 25 ft. forward and 26 ft. aft, so that her average draught coincided exactly with her designed draught, and made the trial a real criterion of the ship's speed, which is more than can be said of the trials of many of the new ships which have lately taken place. The trial proved eminently satisfactory. With a boiler pressure of 146½ lbs., and a mean of 96 revolutions, the starboard engine developed 4,785 and the port engine 4,918 I.H.P., or a total collective I.H.P. of 9,703, being 703 H.P. over the contract. The mean air pressure amounted to 0·18 in., and the coal consumption to 1·9 lbs. per I.H.P. per hour. The mean speed during the eight hours was 17½ knots. The forced draught trial took place on the 6th October, with the following results: Steam in boilers, 146 lbs.; vacuum, 27·6 in. starboard, 27·1 in. port; revolutions, 104·7 starboard, 104·8 port, displaying remarkable uniformity in the action of the two sets of engines; total I.H.P., 6,401 starboard, and 6,773 port, representing a collective I.H.P. of 13,174, or a margin of 174 beyond the contract. The mean air pressure was 1·58 in., and the coal consumption 2·24 lbs. per I.H.P. per hour. The mean speed was 18·5 knots, which, though believed to be below the actual performance, is the greatest speed which has been hitherto attained by an armour-clad. As the cost of the ship has only been some 700,000*l.*, her armour protection is good, and her armament a powerful and useful one, consisting as it does of 4 23-ton guns, 10 4·7 Q.F., and 17 6-pr. and 3-pr. Q.F. guns, many naval officers are of opinion that she will prove the typical fighting ship of the immediate future and the probable forerunner of a number of less enormous vessels than those built of late years. The "Centurion" is to be commissioned as soon as possible, and will take the place of the belted cruiser



"Impérieuse," as flag-ship on the China station, where, from her high speed and offensive and defensive power, she will be a welcome addition to the strength of our squadron in those seas.

The "Havoc," the first of the new torpedo-boat destroyers, has commenced her trials, which appear to have been so far satisfactory, a speed of over 26 knots having been obtained. We shall, however, defer further details until the trials are concluded.

A Parliamentary paper gives the following description of the first-class cruisers "Powerful" and "Terrible," to be built by contract, and for the commencement of which provision is made in the Navy Estimates for 1893-94. The principal dimensions contemplated are as follows:—Length, 500 ft.; beam, about 70 ft.; mean draught with keel, about 27 ft.; displacement, about 14,000 tons. The continuous sea speed for smooth water steaming and with a clean bottom is to be 20 knots. On an eight hours' natural draught contractor's trial, the speed will be about 22 knots. The steel hull will be wood-sheathed and coppered, so that the vessel may keep the sea for long periods without serious loss of speed. A coal bunker capacity for about 3,000 tons will be provided, and, at the above stated draught and displacement, about half that weight will be carried. The armament will include 2 9·2-in. guns mounted as bow and stern chasers, 12 6-in. Q.F. (4 of which will be capable of firing right ahead and 4 right astern), 18 12-pr. Q.F., 12 2-pr. Q.F., besides smaller machine-guns. Armour protection will be provided for all the 9·2-in. and 6-in. guns, and the 12-pr. guns on the upper deck will be furnished with strong shields revolving with the guns. The torpedo armament includes four submerged tubes in two separate compartments. The engines, boilers, magazines, and other vital portions of the ship will be placed below a strong curved steel deck, having a thickness of 4 in. for a large proportion of the length, with a slight reduction of thickness towards the extremities. This deck will be associated with minutely sub-divided coal bunkers extending up to the height of the main deck, these features of protection being identical with those which have been adopted for other 1st class cruisers of the Royal Navy. Most careful study has been bestowed upon all matters relating to the protection of the armament and the gun crews, and to the transport of the ammunition from the magazines to the fighting positions of the guns. There will be an armoured conning tower at the after end of the forecastle. A great height of freeboard has been provided, in association with a long poop and forecastle, upon which the bow and stern chase guns will be carried. This is intended to secure not merely the power of fighting the guns in heavy weather, but also that of maintaining the speed at sea. In order to secure the sea speed above mentioned, it has been necessary to provide for engines and boilers capable of developing a very large horse power. After full consideration, it has been decided to adhere to twin-screws, and not to adopt triple screws, experience in the "Blake" and "Blenheim," as well as in the large twin-screw steamers of the mercantile marine, having established the complete efficiency of such propellers within the limits of power and draught contemplated. It has been decided to postpone the commencement of the "Terrible" until the next financial year, but tenders will be invited for the construction of the "Powerful" as soon as the designs have been completed. This course has been resolved upon in order to advance, during the current financial year, somewhat more rapidly than was originally intended, the construction of the 14 new torpedo-boat destroyers provided for in the programme, and the building of which will be immediately taken in hand.

The scheme for the extension of Keyham is undergoing revision, in order that the new docks may provide adequate accommodation for the immense cruisers which the Admiralty have decided to add to the navy. The plans for the docks, basin, and lock will be considerably altered, and it is now understood that the work will be of greater magnitude than was at first contemplated. The new coaling piers and machinery are now not to be commenced until the dockyard scheme has been finally settled. The dimensions of the new docks which were to have been

built were 600 ft. for one and 500 ft. for the two others, but it is now stated that one will be 700 ft., one 600 ft., and the third 550 ft. long.

Important alterations are being carried out in the new 2nd class cruiser "Bonaventura," which has been selected to relieve the belted cruiser "Orlando" as flag-ship in Australia. The "Bonaventura" is one of the improved "Latona" class, being 25 ft. longer than the first 20 of that type built. These ships were intended to stow 400 tons of coal on ordinary service, and 550 tons when the available space for spare bunkers was utilized; it is hoped, however, by using the space between the protective and main decks, to largely increase her coal-carrying capacity. We are not, however, told what effect upon her trim an additional 250 or 300 tons of coal may make. The "Bonaventura," like her eight sisters of the improved "Latona" type, has a flying upper deck, upon which her guns are mounted, which ought to add materially to the comfort and accommodation of her ship's company.

**Chili.**—A new cruiser, which has been christened the "Blanco Encalada," has been launched at Elswick for this Government. Her dimensions are as follows:—Length, 370 ft.; beam, 46 ft.; displacement, 4,500 tons; engines, 14,500 I.H.P.; and she is to have an estimated speed of 22½ knots. Considering that the Argentine cruiser "5 de Julio," built by the same firm, of about the same tonnage, exceeded this speed, and that the "Yoshino," also lately built at Elswick for the Japanese Government, actually made 23 knots, it is extremely likely that we shall thus see another cruiser for a foreign Power leaving this country possessing a greater sea speed than any cruisers at present built for our own navy. The armament of the "Blanco Encalada" will consist of 2 8-in. guns, mounted on the upper deck, 1 forward and 1 aft; 10 6-in. Q.F. guns, new pattern, 2 of which can fire right ahead and 2 right astern; 12 3-pr. Q.F. guns; 12 1-pr. Q.F. guns; 2 Gatlings; and 5 torpedo-tubes. The vessel will also carry a 2nd class torpedo-boat. She is protected throughout by a steel deck, the sloping portions of which are 4 in. and the horizontal 1½ in. thick. Protection is also increased by the coal-bunkers along the ship's side in the neighbourhood of the water-line.

**France.**—The naval authorities at Brest have received instructions to lay down on the 1st January a new battle-ship, to be named the "Charlemagne." She is described in the programme for 1894, of which we gave the principal details in last month's Notes, as "A 4"; "A 5," to be henceforth called the "Saint Louis," is to be also put in hand at Lorient; while the third ship, "A 3," to be named "Henri IV," is to be built at a private yard. All these ships have been designed by M. Thibaudier, who also planned the four armoured cruisers of the "Charner" class, as well as the "Pothuan." ("Le Yacht.")

In addition to the battle-ships, the plans of one of the new 2nd class cruisers have been approved. She is to be named the "Catinat," and is to be a modified "Descartes," details of which ship were given in the June number. As the "Catinat" is intended for service on distant stations, she will be sheathed with wood and coppered. Her dimensions will be as follows:—Length between perpendiculars, 318 ft. 6 in.; beam, 42 ft.; displacement, about 4,000 tons; engines of 9,000 I.H.P., and an estimated speed of 19 knots. Her armament will probably consist of 4 6-in. Q.F. guns, 10 4-in. Q.F. guns, and 22 small Q.F. guns of different calibres, with 2 torpedo-tubes. ("Le Petit Var.")

The new 1st class cruiser, a sister ship to the "D'Entrecasteaux," is to be called the "Jeanne d'Arc," but she is to be 1,500 tons larger, viz., 9,000 tons, instead of 7,500, which will enable her to carry a much larger coal-supply.

The following are the principal details of the 1st class battle-ship "Charles Martel," which was lately launched at Brest; she is the largest battle-ship hitherto built for the French navy. Length, 380 ft. 6 in.; beam, 72 ft. 1 in.; and with a draught of 27 ft. 6 in. she will displace 11,882 tons. Her engines will be of

13,500 I.H.P., and are expected to give her a speed of 17·8 knots. There will be two screws. Her belt, which is of steel, has a maximum thickness of 17·7 in.; the turret armour is 14·5 in. thick, and there is a protective deck of 3-in. steel. At each extremity of the ship is a turret in which is mounted a single 11·8-in. 44-ton gun. On each broadside, sponsoned out so as to allow of end-on fire, is another turret, in which is mounted one 10·6-in. 34-ton gun. On each broadside, in lighter turrets, are four 5·5-in. Q.F. guns, and on the upper deck and tops are distributed 24 smaller Q.F. guns. ("Le Yacht.")

That England is not the only country in which new ships come to grief over their engines and boilers in their trials is proved by the fact that the new armoured triple-screw cruiser "Dupuy de Lôme" has had to return to Cherbourg from her 24-hour full-speed trial, for a second time, the crowns of the furnaces in two of her boilers having given way; so she will be again laid up for some time for extensive repairs. She was under orders to leave for Toulon at the expiration of her trials, to reinforce the already formidable Mediterranean Active Fleet.

Mr. Normand has achieved another success in the trials of the new torpilleur-de-haute-mer "Chevalier," which has averaged a speed of 27·2 knots. She is of the same type as the "Corsaire" and "Mousquetaire," being 143 ft. long, with a displacement of 123 tons. The fourth, the "Lansquenet," has not yet concluded her trials. ("Le Yacht.")

The new armoured cruiser "Latouche-Tréville" has arrived at Cherbourg, and will be put in commission immediately for her steam and other trials. ("Le Yacht.")

The new 1st class battle-ship "Jauréguiberry" was launched at La Seyne on the 27th October, in presence of President Carnot, Admiral Avelan and the officers of the Russian fleet, and a distinguished company of naval, military, and civil authorities. In our December number we propose to give full details with plans of this fine battle-ship.

**Russia.**—The squadron under Rear-Admiral Avelan left Toulon on the 30th October. It is understood that the "Admiral Nakhimov" and "Rynda" are to proceed to China, while the "Imperator Nikolaj," the "Pamjat Azova," and the "Teretz" will, for the present, form the squadron which is to remain in the Mediterranean. As both the "Imperator Nikolaj" and the "Pamjat Azova" are formidable ships, we will give some details concerning them. The "Imperator Nikolaj" is a 1st class battle-ship, launched in 1889 at St. Petersburg. She is 335 ft. long, with 65 ft. beam, has a displacement of 8,400 tons, engines of 8,500 I.H.P., and a coal stowage of 1,200 tons. She is protected by a complete belt of 14·6-in. compound armour, extending 4 ft. above and 4 ft. below the water-line, the belt terminating forward in a formidable ram; she carries two 12-in. guns in a 12-in. armoured turret forward, four 9-in. guns, two forward and two aft, in a breastwork protected with 10-in. armour, and so arranged that the guns can fire either on the beam or fore and aft, eight 6-in. guns, and sixteen small Q.F. guns, with four torpedo-tubes. She has a sea speed of 16 knots. The "Pamjat Azova" is a 1st class armoured cruiser, launched in 1888, is 370 ft. long, has a 10·6-in. steel belt running three-fourths the length of the ship at the water-line, with a 3-in. protective deck; she carries two 8-in. guns, mounted in sponsons with 8-in. armour, on the upper deck a little before the beam, and on the main deck fourteen 6-in. guns, the two foremost and two aftermost of which, in 8-in. armoured casemates, fire either abeam or fore and aft; seventeen small Q.F. guns, and seven torpedo-tubes, two bow, one stern, and four movable, two on each broadside. Her engines are 11,000 I.H.P. She has a speed of 18 knots, with a coal stowage of 1,200 tons. The "Teretz" is a gun-vessel of 1,200 tons and 1,500 I.H.P., with a speed of 14·5 knots.

The "Pamjat Azova" (The "Memory of Azov") and the "Teretz," according to the special correspondent of the "Times," who has been attending the fêtes at

Toulon in honour of the Russian fleet, carry the Russian ensign with a figure of St. George and the Dragon emblazoned upon it. This honourable distinction, in the case of the first-named ship, commemorates the gallant manner in which the "Azov," the flag-ship of Admiral Count Heiden, fought at the battle of Navarino, her loss in officers and men having exceeded by far that of any other ship present. The "Teretz," in common with all the ships of the Black Sea fleet, carries the distinction on her colours to commemorate the services of the navy during the defence of Sebastopol in the war with France and England. Such distinctions are of a nature to encourage *esprit de corps*, and the officers and men of the ships in question are said to value the honour very highly.

The "Rynda" is manned by officers and men of the Imperial Guard, a picked corps, 2,000 strong, which furnishes crews for the Imperial yacht and a few favoured vessels. The cap ribbons of the men are black and yellow, instead of black; the officers wear red instead of black lace on their epaulettes, eagles on their buttons, and distinctive gold embroidery on their cuffs. During the winter, officers and men go on shore, on duty at the Imperial palaces. The Empress is the head of the corps, a distinction of which the men are very proud.

It is stated on official authority that the new 1st class armoured cruiser "Rurik" and a battle-ship, not yet detailed, will in the spring take the place in the Mediterranean of the "Admiral Nakhimov" and "Rynda."

The coast-defence monitor "Rusalka," which was lost between the 19th and 20th of September last, while proceeding from Revel to Helsingfors, was one of 13 of a nearly identical class built between the years 1864 and 1867 for service in the Baltic. She was 2,026 tons displacement, 206 ft. long, with a beam of 42 ft. 7 in., a draught of 12 ft. 9 in., and a freeboard of only 3 ft. She had a 5-in. armoured belt at the water-line, and carried two 9-in. guns singly in two turrets, one forward and one aft, two 6-in. guns, and two machine-guns. Her engines were only of 780 I.H.P., and her speed 8·5 knots. She was in a bad state of repair at the time, and it is believed that she must have struck on one of the numerous reefs in those waters in the gale that was blowing at the time, and have gone to pieces. There seems to have been some blunder made by some one in authority, as it is reported that the Captain of the ill-fated vessel telegraphed for permission to wait until the weather moderated, but was ordered to proceed. She had a crew of 12 officers and 166 men, all of whom appear to have been lost.

**Spain.**—The latest addition to the Spanish navy, the 1st class armoured cruiser "Infanta Maria Teresa," which has been built and engined by La Sociedad Anónima de los Astilleros del Nervion (founded by Sir Charles Palmer and Don José Martínez de las Rivas), has completed her steam trials with most satisfactory results. The vessel went out from Ferrol and steamed for 4½ hours on the 14th ult., under forced draught, the power developed being, as had been the case in the natural-draught trials, above that specified. The results are as follows:—

	Forced draught.	Natural draught.
Steam pressure (lbs.).....	145	145
Revolutions, starboard.....	117	106
port.....	118	106
I.H.P., starboard.....	6,857	4,686
" port.....	6,901	4,872
" total.....	13,758	9,558
Air pressure (in.).....	1	2·1
Vacuum, starboard.....	27½	27½
" port.....	28	27½
Speed (knots).....	20·15	18·5

The I.H.P. was thus 750 over the contract, the contract speed was exceeded by 0.15 of a knot, and the natural-draught speed by half a knot, the latter notwithstanding a heavy Atlantic swell. The mean draught of the vessel at both trials was 21 ft. 6 in.

We have taken the following details from "Engineering." The "Infanta Maria Teresa" is the first of three cruisers of similar design ordered from the new firm; her length between perpendiculars is 340 ft., and over all 364 ft., with a beam of 65 ft., a depth of 38 ft., and a displacement of 7,000 tons on a mean draught of 21 ft. 6 in. For 315 ft. amidships she has an armour-belt at the water-line 12 in. thick and 5 ft. 6 in. deep, backed by teak. She has the usual cellular double bottom, with 12 transverse bulkheads, the bunkers being also arranged to protect the machinery. The total bunker capacity is 45,000 cubic ft., and 490 tons of fresh water are carried under the boilers.

The armament consists of two 28-cm. guns, mounted singly in barbette turrets, which are plated with 10.6-in. steel armour, one forward and one aft; 10 14-cm. (6-in.) guns, Q.F., on the broadside, the two foremost and two after being in sponsons for end-on fire, and 20 smaller Q.F. and machine guns, with 8 torpedo-tubes. The forgings for the heavy guns were sent from England, but they were turned and finished at the Astilleros del Nervion. It was originally intended to construct the machinery at Palmer's Works, Jarrow-on-Tyne, but on the appointment of Mr. J. McKechnie as engineering manager, it was agreed that he should design the engines and undertake their construction at Bilbao. Works were therefore organized. The engines are of the triple compound type, driving twin screws. The cylinders are 42 in., 62 in., and 92 in. in diameter respectively, the stroke being 46 in. The condensers have a total surface of 14,600 sq. ft., the tubes, over 5,000 in number, being of brass. The crank shafts are 16½ in. in diameter, and the propeller shafts 15¼ in. The propellers have a diameter of 16 ft. 5 in., and 20 ft. 6 in. pitch, the expanded surface being 73 sq. ft. There are four double-ended and two single-ended boilers, having, in all, 40 furnaces, 6 ft. 6 in. long and 3 ft. 3 in. in diameter. The grate surface is 845 sq. ft., the tube surface 22,270 sq. ft., and the total heating surface 25,920 sq. ft. The stokeholds are closed in, forced draught being supplied by nine fans of 5 ft. 6 in. in diameter. There are over 50 separate engines in the ship, all constructed at Bilbao, while a special condenser is also provided. The torpedoes, torpedo-tubes, and air-compressing machinery have all been supplied by Messrs. Schwartzkopff, of Berlin. The other two similar cruisers building by the firm are the "Emperor Carlos V" and the "Princesa de Asturias."

**United States.**—The battle-ship "Oregon," a sister ship of the "Indiana" and "Massachusetts," which took the water earlier in the year, was launched at San Francisco on the 26th October, and is the largest and most important ship constructed as yet for the navy on the Pacific coast. She is 348 ft. long, with 69 ft. beam, and is to have a maximum speed of 16.2 knots. Want of space still compels us to defer a full description of these important ships.

The 1st class cruiser "Columbia," one of the two vessels specially built as "commerce-destroyers," has averaged a speed of 21.5 knots on her steam trials. Her sister ship, the "Minneapolis," was launched some few weeks back.

Considerable interest is being taken in the new torpedo-boats which are now being constructed, two at the New York Navy Yard for the armoured cruiser "Maine," and two others for the battle-ship "Texas." The boats are built as light as possible, so that they can be easily hoisted on board. The torpedo-boats will operate entirely from the men-of-war as regards supplies, only a ton of coal at most being carried. The general dimensions of the boats are as follows:—

	"Maine."		"Texas."	
Length over all .....	61 ft. 8 in.		50 ft. 0 in.	
„ on load water-line.....	58 6		48 1½	
Beam at water-line .....	9 0.3 <sub>16</sub>		9 0.3 <sub>16</sub>	
Freeboard.....	2 5		2 3½	
Mean draught .....	2 2		2 1½	
Extreme „ .....	3 3		3 4	

The "Maine" boats will have a displacement of 14·8 tons each, and the "Texas" 12·15 tons each.

The two boats for the "Maine" will each be fitted with a bow tube for discharging an 18-in. Whitehead torpedo, and the two boats for the "Texas" will each be fitted with a deck training tube for a torpedo of the same size. Each boat will carry a 1-pr. Q.F. gun. The engines are single vertical quadruple expansion, working at a pressure of 250 lbs. The torpedo-boats will be driven at a high rate of speed. It is expected that the "Maine's" boats will make 18 knots, and those for the "Texas" 17 knots, per hour. The torpedoes weigh 875 lbs., with tube and launching gear a little over half a ton, so that a great deal of attention has been given to the question of stability. This weight being considerably above the water-line, the other weights, such as the engine, boilers, &c., are so arranged that the centre of gravity is as low as possible.

The results of calculations for stability are as follows. At nominal condition, ready for service, with ammunition, torpedoes, and crew of five men on board:—

	"Maine."	"Texas."
Metacentric height (ft.).....	1·55	1·5
Angle of heel at maximum stability .....	43°	38°
Righting moment at maximum stability (ft.-lbs.)..	27·13	16·3
Angle of vanishing stability .....	89°	73°

("Scientific American.")

## MILITARY.

**Austria-Hungary.**—One of the most important results of the recent manœuvres is the decision to increase the Hungarian Landwehr, or Honved army, and the necessary credits have already been asked for. The number of staff and regimental officers is to be augmented, and the machinery for keeping the rolls of the force improved. The duration of the periodical exercises is to be made longer, a larger number of men called out to attend them, and more ammunition issued for their use. According to the "Revue du Cercle Mil.," it is even hoped that the Honved army may be brought to equal, or even in some respects surpass, in value the standing army.

The "Armeeblatt" announces that experiments on a large scale have been made with portable asbestos filters, 12,000 of which were supplied to the troops during the recent manœuvres. The filtering power of the fibrous asbestos, which forms the essential part of the apparatus, is renewed by boiling or burning the filtering mass.

**Belgium.**—A scheme for the reorganization of the army has recently been completed by General Brialmont. According to that distinguished officer, Belgium could not now put more than 130,000 men on the war footing, a number which he considers insufficient to ensure the neutrality of the country being respected. The scheme provides for an army of 246,000 men, recruiting being effected by drawing lots, and the system of providing substitutes being abolished. The military Budget, which at present amounts to 47,000,000 francs, would not be raised to more than 49,000,000, as it is proposed to do away with various useless posts and to reduce the period of service. ("Rev. du Cercle Mil.")

**France.**—The death of Marshal MacMahon has called forth expressions of respect and admiration for his character as a soldier from the whole of the military press of Europe, which cannot fail to be gratifying to our brothers in arms in France and to the entire French people. Perhaps the most graceful compliment that has been paid to the memory of the deceased Marshal, and to the French nation, is to

be found in the "Militär-Wochenblatt," the official organ of the German Great General Staff, and we are glad to have the opportunity of reproducing the following notice, which occupies a conspicuous place in the paper referred to:—

"Marshal MacMahon.

"In the person of the late Marshal one of the first soldiers of Europe is buried. On the bier of the deceased are united mementoes from all the countries of the world, which demonstrate that bravery and nobility of character are everywhere recognised, and are placed beyond the influence of the disputes of peoples and parties. Thus His Majesty our Emperor has caused a laurel wreath to be placed on the grave of the Marshal, as a token that Germany and her army know how to honour a brave and noble enemy. In truth, no one has made victory more difficult for us or fought more obstinately than did the deceased Marshal in the battle of Wörth, where he added fresh laurels to his wreath of fame. Friend and foe equally recognised in him the model of a true soldier, and it rejoices the heart of every soldier that our age can yet produce such a chivalrous character *sans peur et sans reproche*.

"May that chivalrous spirit which was so conspicuously displayed by the deceased Marshal continue to sustain us soldiers in all lands! Holding ourselves aloof from the turmoil of politics, let us await the sound of the battle-call, and then be ready to stake our lives in the contest. We shall acquit ourselves as brave soldiers and children of our Fatherland if only we possess the spirit of a MacMahon."

A recent number of "Le Progrès Militaire" contained an article on the reserve troops which took part in the recent manœuvres, the gist of which is as follows:—At this year's manœuvres the "mixed regiments" of last year have been replaced by "reserve regiments," and undoubtedly advantage has been taken of the experience gained to introduce improvements in the organization and training of the cadres; but those who imagined that the reserve regiments would show themselves far superior to the mixed regiments must now have recovered from their illusion. No doubt there was plenty of good will on the part of all, but want of cohesion, training, and mastery of the work. The regiments formed one day and sent to the field the next were collections of men, not units. Nothing could be better calculated to demonstrate the error of those numerous people who believe, or pretend to be convinced, that it is sufficient to collect an adequate number of soldiers in order, *ipso facto*, to form a military unit, a company, battalion, regiment, &c. Several days are required for the personal instruction of the reservists, to bring them anything like up to their former standard; but, good soldiers though the men may be, there is still wanting in the newly-formed units a something which can only be acquired by a body of men who live together for a sufficient length of time. Soldiers can be improvised, especially in France; but nowhere, not even in France, can battalions or regiments be improvised. Many persons believe that with ready-made soldiers and cadres to hand of suitable quality, all that is required is to put the two together in order to have perfectly fit troops. But to produce the latter a third element is necessary, and that is time; for time alone admits of their gaining the indispensable cohesion. The article continues to the effect that it is a mistake to attempt to push reserves into first line, either in the form of mixed regiments or reserve regiments, simultaneously with the active troops. On mobilization, the reserve regiments must be formed after the active regiments and united in brigades and divisions which should follow the active troops at a considerable distance. The time spent in concentrating the reserve troops and fitting them to take the field in complete and good order will not be lost, as it will enable the units to become such in reality, and in addition to having acquired that cohesion which is absolutely necessary for efficiency in the field, the men of the reserve formations will at the end of a few weeks' suitable exercise be capable of performances which will more than compensate for the delay in bringing them to the front.

The opinions as to the value of the reserve officers expressed by General de Cools, one of the Inspectors-General of the Army, at the conclusion of the autumn manœuvres of the Vth Army Corps having caused a considerable amount of ill-



feeling and discussion in the press, the War Minister has thought it advisable to make a communication to the latter to the following effect:—General de Cools' remarks were intended to indicate (1) the importance of the organization of the reserve regiments and the responsibility of the corresponding regiments of the standing army; (2) the incompetence of a certain number of reserve officers destined to assist the captains, and the necessity of imposing further obligations on such of the latter as show deficient practical training, or want of zeal; (3) the advisability of training under-officers to act as adjutants of the reserve. These criticisms ought to be accepted as a proof of the warm interest taken by the higher commanders in the efficiency of the backbone of the reserve troops. Far from looking upon the reserve cadres as useless and fit only to be eliminated from the army, the head-quarter authorities know perfectly well how the greatest advantage may be derived from the services of suitable elements; but, in order to be able to render real service, constant work is necessary. It is the duty of commanders not only to labour zealously in the path leading to this goal, but also to prevent false impressions gaining ground which could only result in cruel deceptions. ("La France Militaire.")

A party consisting of a lieutenant and 22 men of the Alpine troops has been detached to pass the winter in the Alps, in the snow fields of Mount Cenis, 3,000 metres above sea level. The position selected is immediately over the tunnel through the mountain, between Modane and Bardoneche, and within rifle-shot of the Italian frontier. Provisions are stored at the post, which is telegraphically connected with Modane. The object in view is to test the ability of the men to bear the exertions and deprivations which the situation will impose upon them. "Le Progrès Militaire" recalls the fact that a similar experiment was made by Italian troops some years ago, and did not succeed.

In accordance with a recent order of the War Minister, bands are no longer to be permitted to play when troops march before daybreak or very early in the morning. General officers are directed to issue their own orders as to the earliest hour at which bands are to be allowed to play. ("La France Militaire.")

Special attention may be called to the interesting general account of the recent French manœuvres which was furnished by the special correspondent of the "Revue du Cercle Militaire," and which appeared in Nos. 38, 39, 40, 41, and 42 of that periodical.

The Minister of War has decided that, in accordance with the provisions of the Law of Cadres, the battalions and batteries of fortress artillery will in future be denominated battalions and batteries of foot artillery.

The "Moniteur de l'Armée," the oldest of the French military papers, which was founded in 1840, has ceased to exist, having become amalgamated with the "Echo de l'Armée." ("Le Progrès Militaire.")

**Germany.**—A sixth preparatory school for under-officers is going to be established at Bartenstein. The object of these schools is to give a military education to boys who intend to make the army their profession, in the grade of under-officers, and to train them for this purpose from the time when they quit the primary schools until they can be admitted into the non-commissioned officers' schools. Boys are admitted to the preparatory schools between the ages of 15 and 16, the indispensable conditions being that they are able to read and write, have a knowledge of the four rules of arithmetic, and fulfil certain conditions as to physical aptitude. The training at these schools extends over two years, each pupil being required to engage to serve in the active army for a period twice as long as he may pass at the preparatory school, in addition to the time required by the law for private soldiers. The course includes religious instruction, German,

arithmetic, history, geography, natural history, writing, drawing, and singing. On leaving the school, the pupils pass into one of the schools for under-officers, where they serve another two years, and then enter the army as lance-corporals or under-officers.

The German press appears to speak unanimously in approval of the recent order of the General Commanding the XIIIth Army Corps, Graf v. Häseler, forbidding the sale of spirits ("branntwein") in the canteens of the troops belonging to the corps. It is said that the decision to take this measure, which has often been contemplated, was finally brought about by the observation that during the last manœuvres the men very commonly neglected to brew their morning coffee and contented themselves with the more easily procurable "schnaps," and it was noted that these schnaps-drinkers formed a considerable proportion of the men who broke down. There is no doubt that the taste for drinking spirits has made considerable progress in the army during recent years, and, as the "Allg. Mil. Zeitung" points out, the habit is almost entirely foreign to the men, especially to the recruits of South Germany, until they acquire it in the canteens.

New Musketry Regulations for the infantry have been issued, dated 1st October, 1893.

The "Rev. du Cercle Mil." states that it has it on good authority that grand army manœuvres will be carried out next year in the north of Germany which will be organized in all respects as if in actual war. The journal quoted remarks that the German Emperor and the King of Saxony have frequently insisted of late on the necessity of manœuvres of this description, and asserts that it is believed that two armies, each consisting of two army corps with reserve formations, will operate against each other.

**Italy.**—A recent article in "L'Esercito Italiano," headed "Siamo pronti?" ("Are we ready?"), has given rise to a good deal of comment both in Italy and elsewhere on the Continent. Among other things it is stated that the military magazines on the French frontier are, for economical reasons, totally destitute of war material; several regiments of artillery on recently going into camp had not sufficient horses to move their guns; contrary to the assurances of the War Minister, many of the Alpine battalions have not yet received the new rifle, M. 91; and the men, during the recent Alpine manœuvres, were greatly dissatisfied on account of the meat ration having been reduced. The same journal asserts that the want of horses was severely felt during the recent grand manœuvres. Thus three regiments of field artillery had to give up nearly all their cattle in order to horse the infantry wagons, and the batteries themselves could only turn out four guns each.

**Netherlands.**—The "Verslagen, Rapporten en Memorien" contain an important report, furnished by the Dutch School of Musketry, on the subject of the results of experimental firing with the 6.5-mm. (0.256-in.) rifle, which it is proposed to introduce into the Dutch army. The experiments were conducted with a view of testing the penetration of the bullet into sand, ordinary earth, &c. It appears that the greatest penetration observed was, in sand, 20 in., ordinary earth, 22 in., garden mould, 26 in., clay, 31 in., fir, 52 in., oak, 28 in., brickwork, 5.3 in., and iron or steel plates, 0.4 in. It was a remarkable fact that, whilst in the case of wood, and of iron and steel, the greatest penetration was obtained at the shortest ranges, with the other substances, up to a certain distance—as a rule, not exceeding 300 m. (330 yds.)—the penetration increased with range, after which it again began to decrease. For instance, up to 100 m. (110 yds.) the bullet did not once pierce a filled sandbag 12 in. thick, whilst at 300 m. (330 yds.) it penetrated to a distance of about 1½ sandbags. ("Nieuwe Rotterdam. Courant.")

**Norway.**—The "Rev. Mil. de l'Étranger" for September gives an account, extracted from the "Morgenblad," of the experiments which determined the Government to adopt the Krag-Jørgensen rifle of 6.5 mm. (0.256 in.) in preference

to the numerous foreign rifles. The rifle, which weighs 8·8 lbs. without bayonet, is sighted from 50 to 2,200 m. (2,405 yds.).

**Portugal.**—The War Minister has recently published a decree authorizing civilians to practise rifle shooting at the targets on the ranges at all military stations. The privilege is granted gratuitously to all citizens, irrespective of their social position, but the right of firing at the military ranges can only be claimed by persons who submit to certain conditions, of which the following are the most notable:—Those who take part in the practices must obey the prescriptions contained in the military regulations regarding the maintenance of good order and discipline at the ranges; all the requirements of the firing regulations must be observed; the cartridges used must be paid for; boys under 15 years age and those who, owing to physical defects, are not fit to use the rifle will not be allowed to enter; arms will be provided gratuitously by the State; the instruction imparted will include preliminary exercises, firing up to 600 metres, and special firing exercises, all to be carried out according to the military regulations. Further details from the "Ordem do Exercito" are given in the "Rev. du Cercle Mil.," No. 44, from which this note is extracted. It is hoped that this scheme for the organization of rifle practice throughout the civil population will have an important bearing on the defence of the country.

**Russia.**—The swords of the cavalry are to be provided with wooden scabbards covered with hardened india-rubber, in place of leather. The experiments which have been made with the new equipment show that the scabbards are not affected by the heat of the sun, frost, or moisture.

The "Rev. du Cercle Mil." announces that a second telegraphic line has been completed between China and Russia, viz., from Houn-Tehoun to Novokievsk. A third is under construction, passing through Koulja, and a fourth is to be built next spring by way of Mai-ma-tchin and Kiakhtha. The last-named, which follows the old caravan route, will be the most important of all, as it will form the shortest line of telegraphic communication between Peking and Europe.

For some time past the question of more thoroughly incorporating the Finnish troops with the Russian army has been much discussed in the Russian papers, and it is suggested that the matter has been mooted through Government influence. One of the proposed innovations is the abolition of the Finnish Cadet Corps, or, at any rate, the introduction of a law that the pupils who pass out of the corps shall not receive a commission until they have passed a further examination in a Russian war-school. Next, it is proposed that all Finnish officers shall be incorporated in regiments serving in the interior of the Empire, and similarly as regards the recruits. There is a further proposal that the Finnish regiments should be quartered in the interior and their place taken by Russian troops. ("Allg. Mil. Zeitung.")

In the late grand summer manoeuvres, which were held, in the presence of the Emperor, from the 29th July to the 4th August, the following troops were engaged: the western army, under General Daniloff, consisted of 42 battalions, 26 squadrons and sotnias, and 82 guns, while the opposing eastern army, commanded by General Seddler, was composed of 38½ battalions, 26 squadrons and sotnias, and 90 guns.

**United States.**—Recruits are so plentiful that the establishment of the army (25,000) is practically complete, recruiting operations for the mounted troops and coloured regiments are suspended, and many of the recruiting stations closed. The cause of this unusual state of affairs is the great depression in trade and the consequent inability of many thousands of young men to find employment. According to the "Army and Navy Journal," the requirements of the recruiting service have never been so strictly observed as at present, nor have so many would-be recruits

been rejected. During the past year, 25,294 men presented themselves at the various recruiting offices, of whom 6,697 were accepted; and in some of the larger cities, such as New York and Boston, not less than 90 per cent. of the applicants were rejected. Owing to the great field for the selection of recruits, the educational acquirements and social position of the men recently enlisted are exceptionally high.

## FOREIGN PERIODICALS.

### MILITARY.

*Militär-Wochenblatt.*—No. 88. "Rifled Breech-loading Mortars in the United States." "Further Remarks on the Over-work of Troop Horses." No. 89. "Reflections on the Manœuvres from an Artilleryman's Point of View." "The Grand Manœuvres of 1893 at Krasnoe Selo." "Voluntary Firing Exercises in Switzerland." No. 90. "General Review of the Imperial Manœuvres in Alsace-Lorraine." "War, Peace, and Culture" (a review of Lieut.-Colonel Max Jähn's work "Ueber Krieg, Frieden und Kultur. Eine Umschau"). "Experimental Instructions for the Strategical Service of Cavalry" (*à propos* of Colonel Baikow's [Russian] work on that subject). "The Portable Tents of the Austro-Hungarian Infantry." No. 91. "General Review of the Imperial Manœuvres" (*continued*). "Experimental Instructions for the Strategical Service of Cavalry" (*concluded*). "English Torpedo-boat Catchers." No. 92. "The English Infantry Drill." (A *résumé* of the principal changes and peculiarities in the "Infantry Drill" of 1894. The only criticism is that contained in the concluding sentence of the article: "As compared with its predecessors, the present Regulation shows simplification in the formal methods of procedure, and, in most cases, an advance in tactical views.") No. 93. "The Camp at Krasnoe Selo." No. 94. "General Review of the Imperial Manœuvres in Alsace-Lorraine" (*continued*). "The Infantry Musketry Regulations of 1893." "The Acquirement of the Russian and Polish Languages by German Officers." No. 95. "The Infantry Musketry Regulations of 1893" (*concluded*).

*Beiheft zum Militär-Wochenblatt.*—Heft 10. "Extract from the History of the Hanoverian Light Troops during the Seven Years' War." By Colonel Freiherr v. Bothmer.

*Neue Militärische Blätter.*—October. "Colonel de Ponchalon's 'Souvenirs de Guerre' (1870—1871)" (*continued*). "Two New Flags in the Mediterranean." "An English Privateer—War between France and England" (a reproduction of M. Garçon's articles in "La France Militaire" *à propos* of "The Captain of the Mary Rose"). "A Few Words about the Swiss Soldier." "General Skobelev and the Moral Element" (*continued*). "A Sketch of the Battle of Lübeck" (*continued*).

*Jahrbücher für die Deutsche Armee und Marine.*—October. "The Reform in the Engineer Organization of the Austro-Hungarian Army." "The French Military Organization since 1889." "Consideration of the Conditions under which Officers are detailed to study at the Kriegsakademie." "The Exercises of the Medical Service during the Autumn Manœuvres." "The House of Savoy" (from the "Rivista Militare Italiana"). "The New Russian Musketry Regulations." "Gibraltar and the Western Mediterranean." "The Foundering of H.M.S. 'Victoria'."

*Organ der Mil.-Wiss. Vereine.*—Heft 1. "The Position of Guns in the Attack of Fortresses." "Exercises on Mountain Ranges. Light Infantry. Jagd-Commandos."

*Journal des Sciences Militaires.*—October. "The Tactical Instruction of Officers" (concluded). "The Battle of the Vesles." (The first instalment of an article the object of which is to picture the conditions under which the war of the future will be carried on.) "The Infantry Battalion under Artillery Fire." (Suggestions as to the best formations.) "Frontiers and Fortifications of the Principal Powers—Austria-Hungary." "The Meaning of Victory, as conceived by the Great Generals." "The Campaign of 1814" (continued). "A Reserve of Algerian Tirailleurs" (Proposals for). "The English Campaign in the Soudan, 1884-85" (continued).

*Revue Militaire de l'Étranger.*—October. "The Italian War Budget for 1893-1894." "The Grand Russian Manœuvres of 1893 at Krasnoe-Selo." "The Danish Infantry Musketry Regulations." "The Reorganization of the Netherlands Navy."

*Spectateur Militaire.*—1st October. "Long-distance Firing." "A Year's Column Work in Algeria" (continued). "Souvenirs and Lessons from History" (continued). "The Memoirs of Adjudant-Général Jean Landrieux." 15th October. "The French Infantry Drill Regulations of 1889; what they prescribe, forbid, and permit." "A Year's Column Work in Algeria" (continued). "Souvenirs and Lessons from History" (continued).

*Revue du Cercle Militaire.*—No. 41. "The Grand Manœuvres of 1893" (continued). "The New Firing Regulations for the Italian Artillery" (continued). No. 42. "Three Outpost Manœuvres with the 86th Regiment" (with map). "The New German Field Fortification Regulations" (continued). No. 43. "The Russian 'Okhotniki' and Night Attacks." (The writer of this article explains that these okhotniki (volunteers or chasseurs) were first organized in 1886, and consist of selected men in each regiment of infantry and cavalry, who, while in all respects performing the same duties as the rest of their comrades, are specially prepared to carry out exceptional missions in time of war which are particularly dangerous or require the exercise of great personal initiative.) "The Grand Manœuvres of 1893" (concluded). No. 44. "The Problem of Mounted Infantry resolved by the Employment of the Bicycle." "The New German Field Fortification Regulations" (continued). "The New Firing Regulations for the Italian Artillery" (concluded). "The Severe Attack of Scoury in the Russian Guard and Troops in the Military District of St. Petersburg."

*Revue de Cavalerie.*—October. "Cavalry operating with Detachments of all Arms" (with map). "The Supply of Men and the Remounts of the Cavalry of the Grand Army in 1806-7" (continued). "The Paces of Horses revealed by the Experimental Method" (continued). "A Marching Regiment of Dragoons, 1810." "The Report of an Inspector General of Cavalry in 1829." "The Manœuvres of the 2nd and 6th Cavalry Divisions" (reproduced from the "Journal des Débats").

*Revue Militaire Suisse.*—October. "The New Fire-arms in the United States." "The French Manœuvres of 1893" (a short general account).

*Journal of the U.S. Cavalry Association.*—September. "Employment of Cavalry in War." "Chapters from 'Organization and Tactics.'" (By Captain Wagner, Instructor in Art of War, U.S. Infantry and Cavalry School. Chapters I and II on "Organization and Discipline" and "Characteristics of the Three Arms," taken from the advance sheets of the work quoted.) "Notes on the Horse; his Origin and the different Modes of Shoeing him in Early and Modern Times." "The New German Cavalry Drill Regulations of April 6, 1893."

## NOTICES OF BOOKS.

*Bewaffnung der Feldartillerie der Schweiz und ihrer Nachbarstaaten.* By Colonel A. SCHUMACHER, Chief Instructor of the Swiss Artillery.

A copy of this little pamphlet, which is apparently not on sale, can be seen in the Library. It contains a very complete account, in tabular form, of the field artillery of Switzerland, France, Germany, Austria-Hungary, and Italy. The tables give the details of the matériel, personnel, horses, ammunition, ballistic properties of the guns, and organization of the several field artilleries, corrected up to September, 1893.

✓ *Drill Regulations of the German Field Artillery, 1892.* Translated for the Intelligence Division, War Office, by Captain W. A. MACBEAN, R.A. London: Official, 1893. Price 2s. 6d.

In the March number of the Journal we gave a general account of the most important changes introduced into the German Field Artillery Drill, and we now hail with pleasure the appearance of a complete translation of the "Exerzir Reglement." Captain Macbean has done his work very thoroughly, and, unlike some translators of foreign military works, has taken great care to employ terms which fully express the meaning of the original text, and at the same time are intelligible to persons who may not be conversant with the German drill formations and methods of procedure. As an illustration we may observe that he very properly translates "Abtheilung" by "brigade divisions," a term which is intelligible to the British gunner, but would undoubtedly strike horror into the logical soul of a German artilleryman. The use of the French term "combat de rencontre" as the equivalent for "Begegnungsgefecht" would equally offend the German purist, but it is a good instance of the difficulty of finding an English equivalent for a word which denotes a form of attack which is not peculiar to any army, and ought surely to be capable of being turned into plain English. The term "chance engagement," although perhaps not perfect, might be made to serve our purpose as well as the French expression. Although these Regulations will chiefly be of interest to the artillery soldier, the chapter on "Battle" (Part IV) should be studied by officers of all arms.

✓ *Up the Niger. Narrative of Major Claude MacDonald's Mission to the Niger and Benue Rivers, West Africa.* By Captain A. F. MOCKLER-FERRYMAN, F.R.G.S., F.Z.S., Oxfordshire Light Infantry. With Map and 15 Illustrations. London: G. Philip and Son, 1892. Price 16s.

This important addition to the scanty modern literature relating to the Niger, which was very favourably reviewed in the press at the time of its publication, gives an account of the last Government Mission to the Niger River which was conducted by Major (now Sir Claude) MacDonald in 1889, and the author of the book was Private Secretary to the Commissioner. The work, which is entertaining as well as instructive, may be read with advantage not only by all who take any special interest in the country and peoples described, but also by that larger section of the community who know nothing whatever of the Niger Territory, but delight in reading trustworthy accounts of travel in comparatively unknown countries. In his preface the author gives a brief sketch of the history of the discovery and opening up of the Niger River, and the establishment of the Royal Niger Company, and in the course of the work he enables the reader to gain a thorough insight into the peculiarities of the country and peoples met with in the vicinity of the Niger and its tributary streams. The book is readable and interesting throughout. The last chapter, on the music and musical instruments of Africa,

compiled from the materials systematically collected by the members of the Mission, is from the hand of Captain C. R. Day, so well known for his unique work on the Music of India.

*History of the French in India.* By Colonel G. B. MALLESON, C.S.I. London: W. H. Allen & Co. Price 16s.

This is "a carefully compared and revised edition" of the book published in 1867. We are told clearly the story of the French occupation, from the founding of Pondichery in 1674 to the first British capture in 1761; and many points hitherto left doubtful are elucidated by extracts from, and references to, the best available authorities. Colonel Malleson does ample justice to those illustrious Frenchmen whose achievements in the interest and for the glory of their country were repaid by base and cruel ingratitude.

The author adheres, with some slight variations, to that spelling of Indian proper names which may please Oriental scholars, but which is bewildering to ordinary English readers. In a lengthy appendix (called A, though there is no B) the question of La Bourdonnais having received a pecuniary bribe to admit of the ransom of Fort St. George is discussed with considerable acrimony by the author and Sir George Birdwood, Colonel Malleson maintaining the affirmative view, and Sir George defending the accused Frenchman.

The volume is carefully printed and tastefully bound.

O'C.

*Historical Records of the Royal Marines.* Vol. i. By Major L. EDEY, R.M.L.I., Barrister-at-Law. London: Harrison and Sons, 1893. Price 2l. 2s.

The above title conveys a very inadequate conception of the scope and objects of the work, which is not merely a history of the Royal Marines raised in 1755, and continued with an unbroken and honourable record to the present day, but of every corps called Marines, or that acted as Marines, from the time of the Restoration. About half of the volume is occupied by an exhaustive account of the Duke of York's Maritime Regiment, which was raised in October, 1664. Major Edey shows, almost beyond the possibility of doubt, that this regiment was not incorporated in the Coldstream, as is stated by other historians, but was disbanded officially on the 23th of February, 1689, and actually soon after that date. The disappearance of this first marine regiment was quickly followed by the formation of two new regiments in 1690. These were united in 1698, and three infantry regiments were made marines. The four were maintained till the close of the century, when also the narrative of the first volume ceases.

These records are, unfortunately, from the nature of their subjects, dry and uninteresting to the general reader; but they form a monument of patient and accurate historical research, and they will be invaluable for reference when the shallow criticisms with which, in some quarters, their appearance was greeted are long forgotten.

O'C.

#### LIST OF RECENT FOREIGN BOOKS (MILITARY).

*Mémoires de l'Adjudant-Général Jean Landrieux, Chef d'État-Major de la Cavalerie de l'Armée d'Italie, Chargé du Bureau Secret (1795-1797), avec une Introduction Biographique et Historique.* By LÉON GRASILLIER. Vol. i. Bergame-Brescia. 2nd edition. Paris: Savine, 1893. 7 fr. 50 c.

*L'Infanterie Montée et les Compagnies Mixtes dans les Guerres Coloniales.* ANON. Paris: Lavauzelle. 1 fr.

*La Tactique dans les Guerres du Moyen Âge.* By J. DE LA CHAUVELAYS. Paris: Berger-Levrault, 1893. 2 fr. 50 c.



*Études Pratiques de Guerre.* By General LAMITRAUX (Commandant de l'École Supérieure de Guerre). With Atlas of Plates. 3rd Edition. Paris: Lavauzelle, 1893. 6 fr.

*Les Dernières Cartouches* (Janvier, 1871). *Villersexel—Héricourt—Pontarlier.* By H. GENEVOIS. Paris: Le Soudier, 1893. 7 fr. 50 c.

*Der Krieg an den Rückwärtigen Verbindungen der Deutschen Heere und der Etappendienst.* By Colonel G. CARDINAL VON WIDDEEN.

Part 1. *Hinter der Front der Maas-Armee*, with 4 plans.

Part 2. *Die Bekämpfung des Volkskrieges im General-Gouvernement Reims, &c.*, with 7 sketches.

2 vols. Berlin: Eisenschmidt, 1893. 12 mks.

*Militärische Essays IV. Die Taktik der einzelnen Waffen, an Kriegsbeispielen erläutert.* By R. V. Berlin: Dümmler, 1893. 1 mk.

*Der Serbisch-Bulgarische Krieg von 1885. Eine Militärische Studie von einem Deutschen Offizier.* Darmstadt: Zernin, 1893. 2 mks. 50.

*Ueber Krieg, Frieden und Kultur. Eine Umschau.* By Lieut.-Colonel MAX JÄHNS. Berlin: Verein für Deutsche Literatur, 1893. 6 mks.

*Biographische Denkmale Bayerischer Reiterführer.* Generals von Seydewitz (1769—1816) and von Diez (1769—1850). By Captain E. BUXBAUM. 2 vols. Berlin: Sigismund, 1893. Vol. i, 1 mk. 50; vol. ii, 2 mks.

*Automatischer Tempierschlüssel.* By Major-General A. RITTER VON KROPA-TSCHEK. Vienna: Seidel, 1893. 1 mk. 20.

*Aphorismen über die K. u. K. Cavallerie, von Einem Alten Cürassier.* Vienna: Seidel, 1893. 1 mk. 60.

*Taschenkalender für das Heer.* (For 1894.) By Major-General VON FIRCKS. Berlin: Bath, 1893. 4 mks.

#### (NAVAL).

The attention of naval officers is drawn to a list of "Standard Books on Professional Subjects" prepared by Lieutenant G. W. MENTZ, U.S. Navy, published in the United States Office of Naval Intelligence General Information Series, No. XII, copy of which can be consulted in the Library. The list of books, which is well up to date, is divided under the following heads:—Armour; Compasses; Chronometers; Electricity and Magnetism; Explosives; Hygiene; International Law; Machinery; Metallurgy, Chemistry, &c.; Meteorology, Laws of Storms, &c.; Naval Ship Construction; Navigation, Surveying, &c.; Ordnance (Ammunition, Guns, Rapid-fire Guns, Small Arms, Projectiles); Tactics; Torpedoes, Submarine Mines, &c.; Miscellaneous.

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